

Service Manual

PROJECTION TELEVISION
VZ9 / VZ9+ CHASSIS

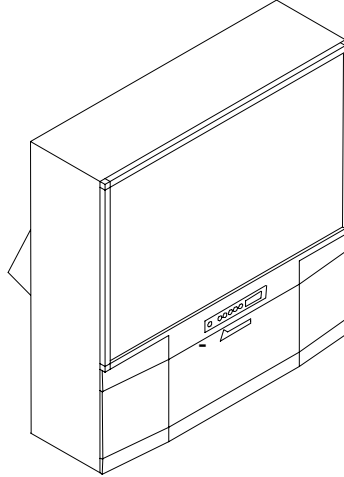
VZ9 MODELS

VS-45609

VS-50609

VS-55609

VS-60609



VZ9+ MODELS

VS-60719

VS-70709

CAUTION:

Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

SPECIFICATIONS

- | | |
|---|---|
| <ul style="list-style-type: none"> • Power Input : AC 120V, 60Hz • Power Consumption : 200W • Frequency Range : VHF 54 ~ 470MHz
UHF 470 ~ 806MHz • Antenna Input : VHF/UHF 75Ω unbalanced
Single axis input • CRT Size : 7" • High Voltage : 32.0kV (at 0A) • Speaker : [VZ9]
4" round type, full range 2 pcs.
(8Ω 10W)
[VZ9+]
5" round type, full range 2 pcs.
(8Ω 10W) • Weight : [VS-45609] 176 lbs
[VS-50609] 198 lbs
[VS-55609] 229 lbs
[VS-60609] 259 lbs
[VS-60719] 253 lbs
[VS-70709] 369 lbs | <ul style="list-style-type: none"> • Cabinet Dimensions : [Model] (H)x(W)x(D)
[VS-45609] 48"x38.4"x22.2"
[VS-50609] 50.4"x42.8"x23.8"
[VS-55609] 54.8"x46.4"x23.7"
[VS-60609] 60.8"x50.6"x29"
[VS-60719] 60.8"x50.6"x29"
[VS-70709] 70.5"x58.7"x29.4" • Input Level : VIDEO IN JACK (RCA Type)
1.0Vp-p 75Ω unbalanced
AUDIO IN JACK (RCA Type)
-4.7dBm 43kΩ unbalanced
S-VIDEO IN JACK
(Y/C separate type)
Y: 1.0 Vp-p C: 0.286Vp-p (BURST)
75Ω unbalanced
Component Inputs (RCA Type)
Y: 1.0Vp-p
Cr, Cb: 700mVp-p • Output Level : VIDEO OUT JACK (RCA Type)
1.0Vp-p 75Ω unbalanced
AUDIO OUT JACK (RCA Type)
-4.7dBm 4.7kΩ unbalanced |
|---|---|

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.

9351 Jeronimo Road, Irvine, CA 92618-1904

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INTRODUCTION

This service manual provides service instructions for PTV Models VS-45609, VS-50609, VS-55609 and VS-60609 which use the VZ9 chassis, and PTV Model VS-60719 and VS-70709 which use the VZ9+ chassis. Service personnel should read this manual thoroughly before servicing these chassis.

This service manual includes:

1. Assembly and disassembly instructions for the front and rear cabinet components.
2. Servicing of the Lenticular Screen and Fresnel Lens.
3. Servicing printed circuit boards (PCBs).
4. CRT replacement procedure.
5. Electrical adjustments.
6. Chip parts replacement procedures.
7. Circuit path diagrams.

The parts list section of this service manual includes:


1. Cabinet and screen parts.
2. Electrical parts.

Schematic and block diagrams of the above listed models are included in this service manual for better understanding of the circuitry. PCB drawings are also included for easy location of parts and test points.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading  on the schematic diagram and by **bold type** in the parts list of this service manual. **The replacement for any safety part should be identical in value and characteristics.**

SAFETY PRECAUTIONS

NOTICE: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING:

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
2. Do not install, remove or handle the picture tubes in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

X-Radiation warning

The surface of the cathode ray tubes (CRTs) may generate X-Radiation, so take proper precautions when servicing. It is recommended that a lead apron be used for shielding while handling the CRT. Use this method if possible.

When replacing the CRTs, use only the designated replacement part since it is a critical component with regard to X-Radiation. High voltage must be set as prescribed under the section titled Electrical Adjustments.

Leakage current check

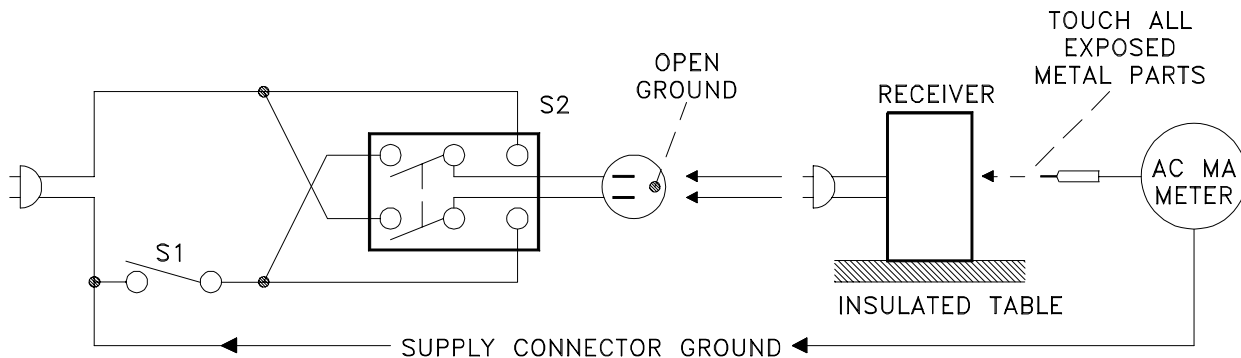
Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check

With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis **should be a minimum of 1 Mega Ohm**. Any resistance below this value indicates an abnormal condition and requires corrective action.

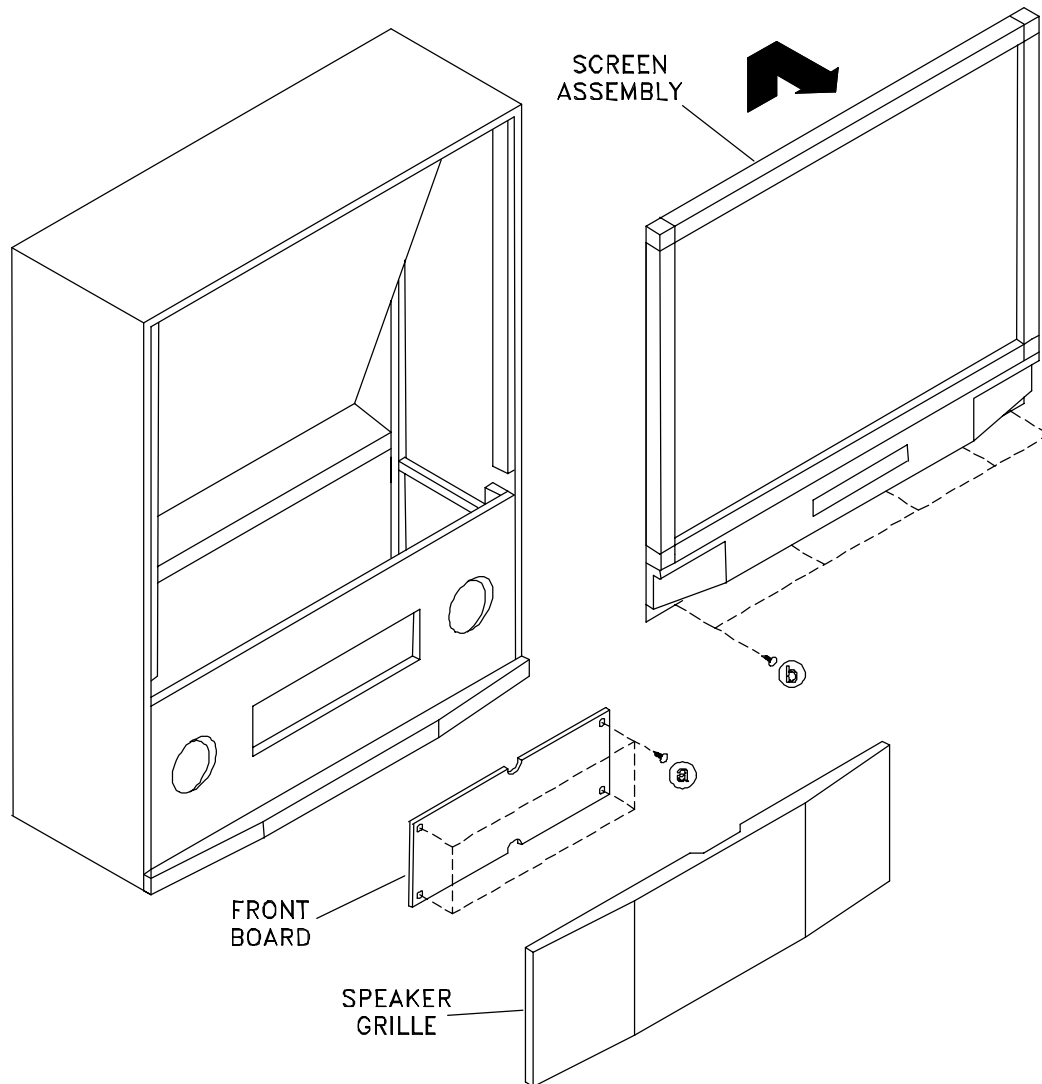
2. Hot Check ...Use the circuit shown below to perform the hot check test.

1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. **The leakage current must not exceed 0.5 milliampere (mA).**



CABINET DISASSEMBLY (FRONT VIEW)

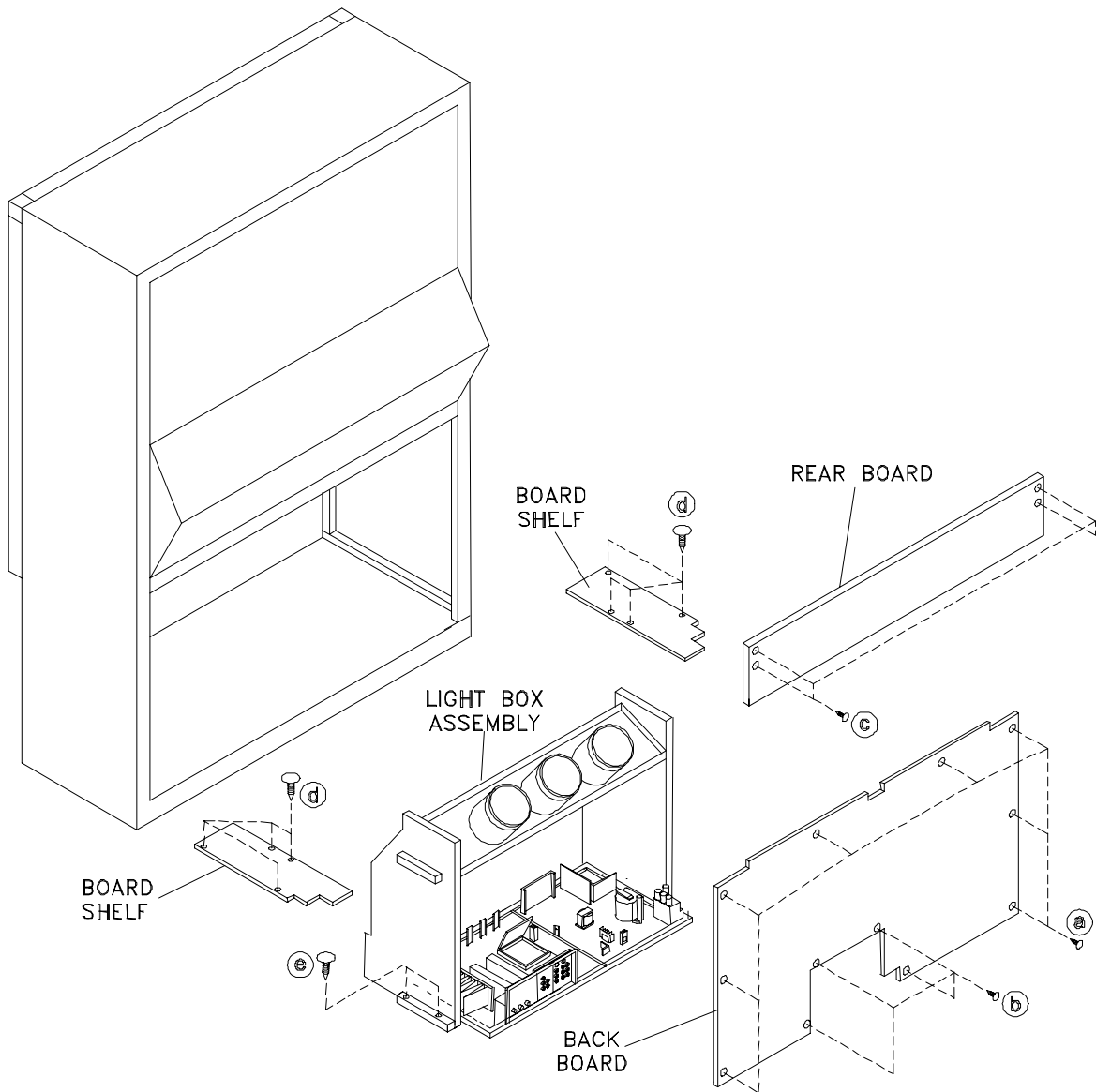
*Refer to PARTS LIST for Part Numbers



1. Front Cabinet Disassembly

1. Remove the Speaker Grille by pulling forward.
2. Remove the Front-Board by removing 4 screws "a".
3. Remove the Screen Assembly by removing screws "b". Disconnect all cable harnesses between the Screen Assembly and the PCB-Signal.
4. Lift the Screen Assembly and pull up and away from the cabinet as shown.

CABINET DISASSEMBLY (REAR VIEW)



2. Rear Cabinet Disassembly

1. Remove the Back Board by removing 8 screws "a" and 4 screws "b".
2. Remove the Rear Board-1 by removing 4 screws "c".
3. Remove 4 screws "e" (two not shown) and 8 screws "d" securing the Light Box Assembly and the Board Shelves.
4. Remove the Board Shelves by lifting up and out.
5. Be certain that all cables and connectors between the Light Box Assembly and external items are disconnected (e.g. speaker plugs).
6. Slide the Light Box Assembly out of the cabinet.

SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

1. Removal of the Lenticular Screen and Fresnel Lens

CAUTION: **Wear gloves** when handling the Lenticular Screen and the Fresnel Lens. This prevents cuts and finger prints. **Do not place the Fresnel Lens in the sun.** This may cause fire and heat related injuries.

1. Remove the screen assembly as shown in the Cabinet Disassembly procedure. [Figure 1-1]
2. Remove the Screen Holder by removing screws (a). [Figure 3-1]
3. Slide the Lenticular Screen and Fresnel Lens from the Screen Frame.

Note: When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw driver, and remove the pressure sensitive, double sided tape.

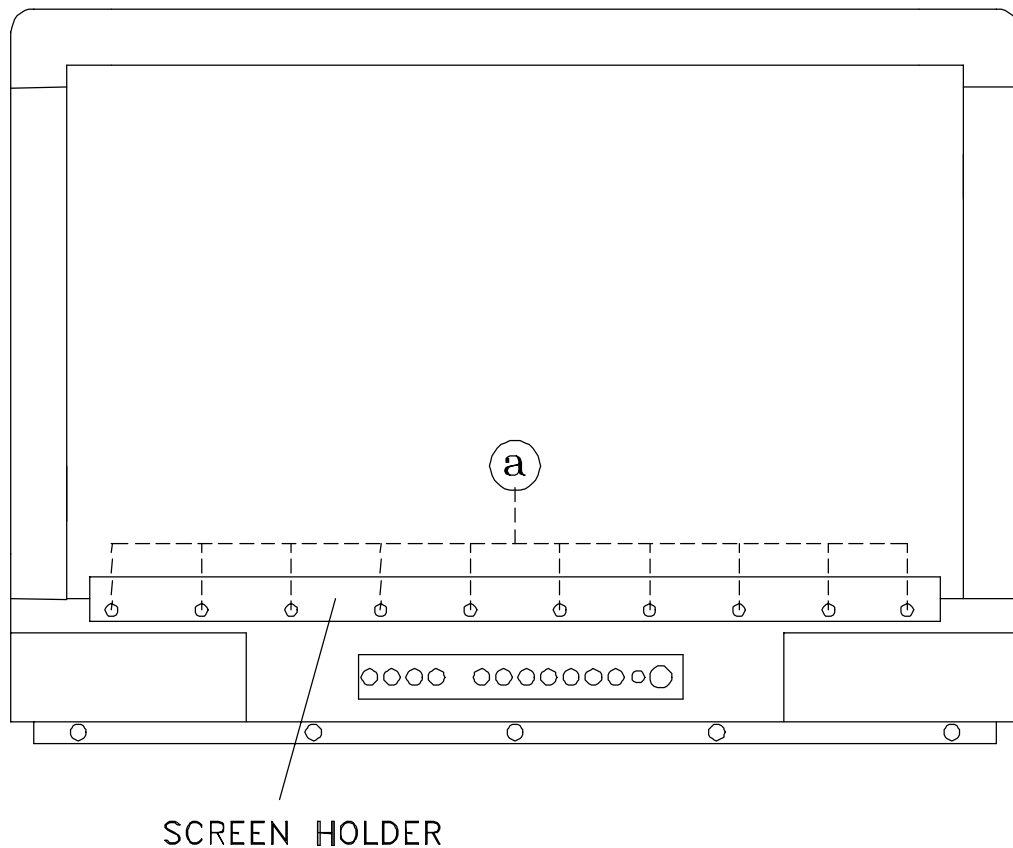


Figure 3-1

2. Installation of the Lenticular Screen and Fresnel Lens

Note: Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity may deform the Lenticular Screen and Fresnel Lens.

1. Apply double coated tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens as shown in figure 3-2. Refer to Table A for proper tape length.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown in figure 3-2.
3. Install CUSHION-CORNER pads at the bottom corners on the back of the Fresnel Lens, as shown in figure 3-3.

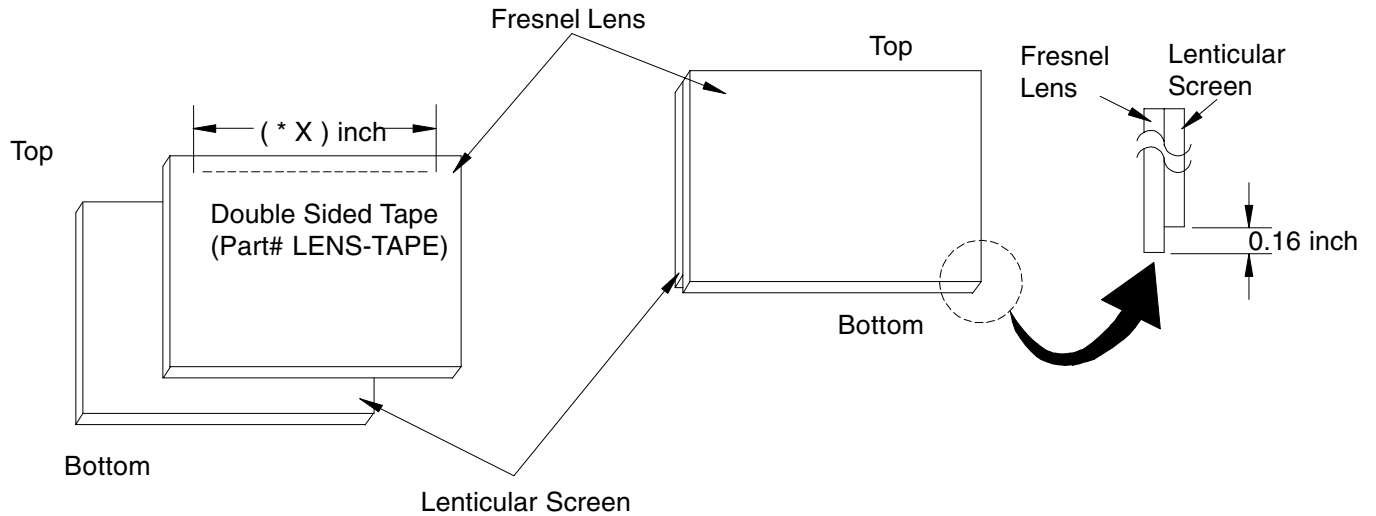


Figure 3-2

* Tape Application Guide

MODEL	SCREEN SIZE	TAPE LENGTH
VS-45609	45"	36"
VS-50609	50"	40"
VS-55609	55"	44"
VS-60609	60"	48"
VS-60719	60"	48"
VS-70709	70"	56"

Table A

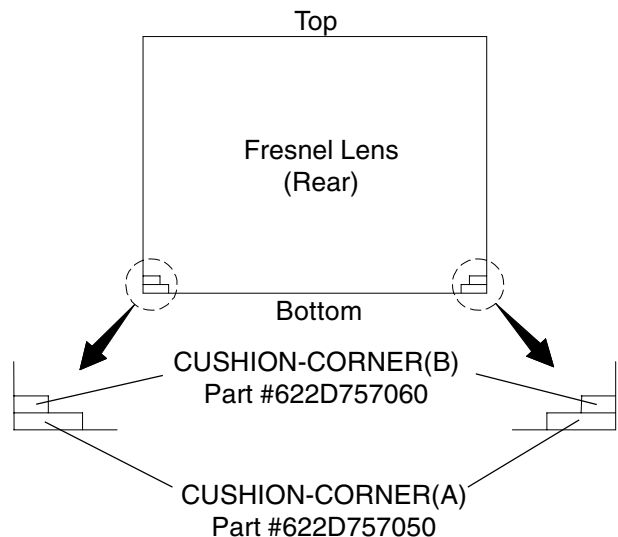


Figure 3-3

CABINET SEPARATION PROCEDURE (VS-70709)

Model VS-70709 cabinets are assembled in two pieces. These two pieces may be separated to allow easier delivery and setup.

Note: *The Guide Pins under the cabinet top may break if mishandled. Keep the cabinet top straight when removing and installing. DO NOT tilt the cabinet top while resting on the guide pins.*

1c. VS-70709 Cabinet Separation Procedure

1. Remove the Screen Assembly and disconnect all cable harnesses between the Frame Assembly and the PCB-SIGNAL (refer to **1a. Front Cabinet Disassembly**).
2. Remove 4 screws "a" securing the top and bottom cabinet sections (Figure 1-3).
3. Lift the cabinet top straight up until the guide pins are clear.
4. Carefully place the cabinet top on the floor.
5. Place the cabinet bottom in the desired location.
6. Reverse the procedure and mount the cabinet top on the cabinet bottom.
7. Reinstall the the Screen Assembly and connect all cable harnesses between the Screen Assembly and the PCB-SIGNAL.

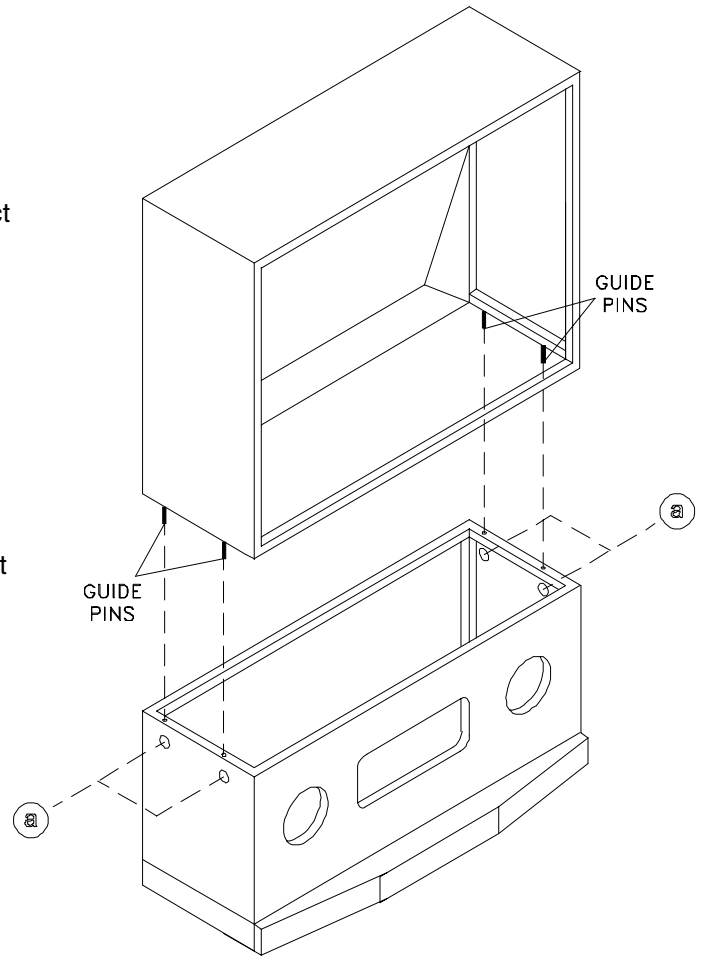


Figure 1-3

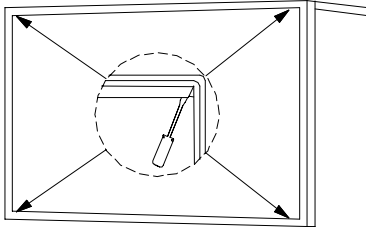
SERVICING THE DIAMONSHIELD™

1. DiamondShield™ Removal Procedure

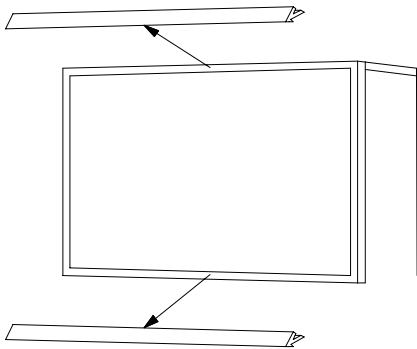
The location of the DiamondShield™ molding clips may vary between models, top and bottom, or sides. Use the appropriate disassembly procedure given below.

Note: *Wear gloves when handling the DiamondShield™ to prevent finger prints.*

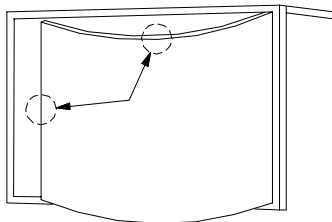
Top & Bottom Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.

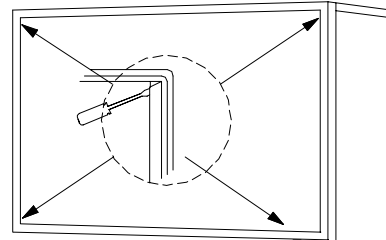


2. Remove both clips by pulling them toward you.

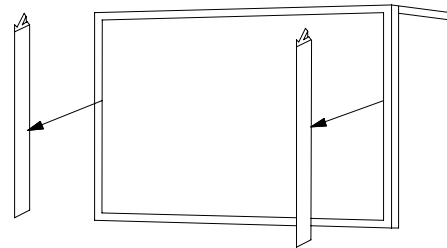


3. Carefully insert a small screwdriver into the gap at the top/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

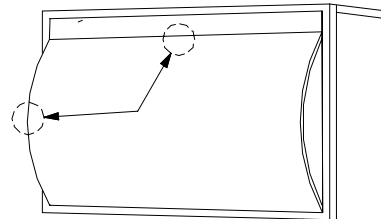
Side Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.



2. Remove both clips by pulling them toward you.



3. Carefully insert a small screwdriver into the gap at the side/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

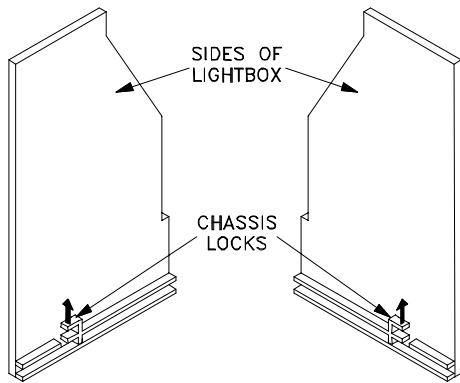
2. DiamondShield™ Installation Procedure

*(See the Parts List for DiamondShield™ part numbers)

To install the DiamondShield™, reverse the above Removal Procedure.

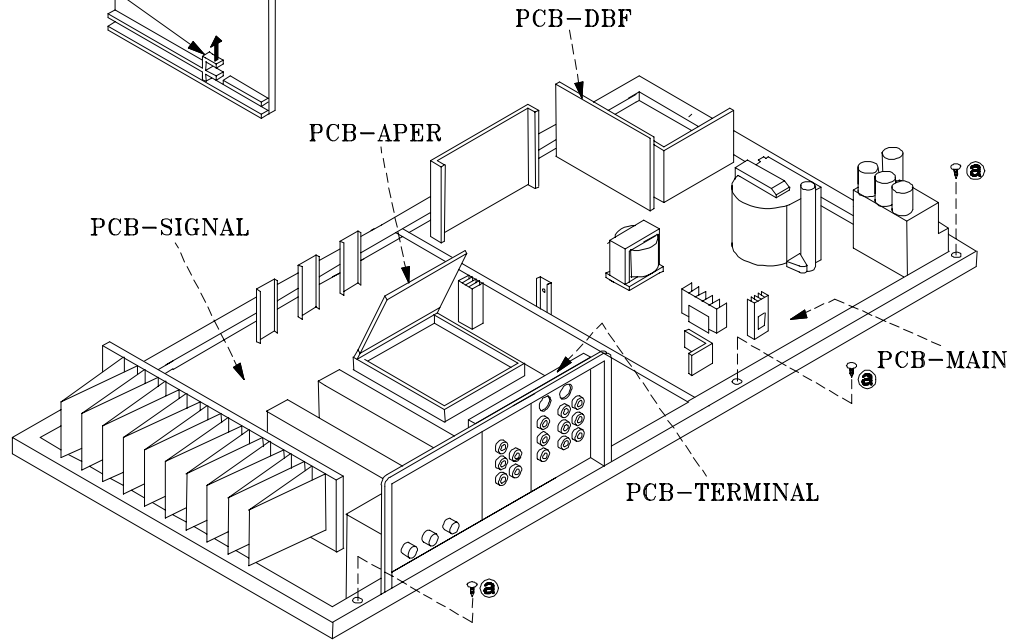
SERVICING PCBs

Chassis Removal and PCB Locations

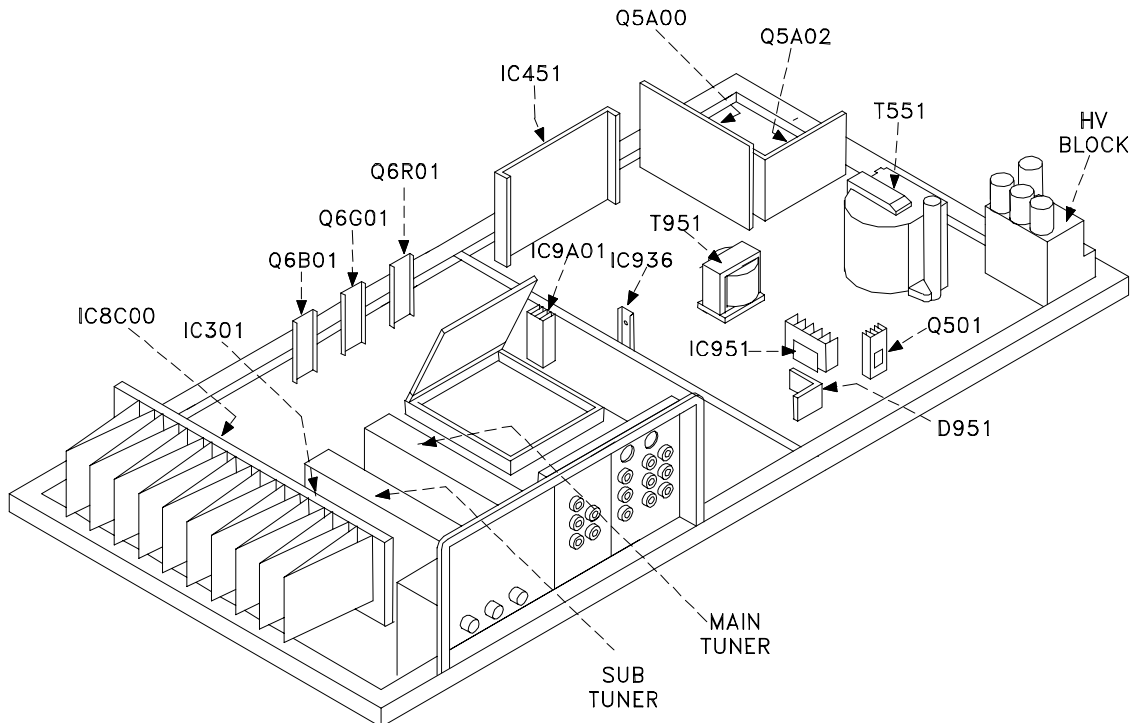


Chassis Removal

- 1) Remove 3 screws "a" from the Main Chassis.
- 2) Raise the two chassis locks on the inner sides of the Lightbox Assembly and slide the chassis towards the rear.



Major Parts Locations



CRT REPLACEMENT

1. Removal of the CRT

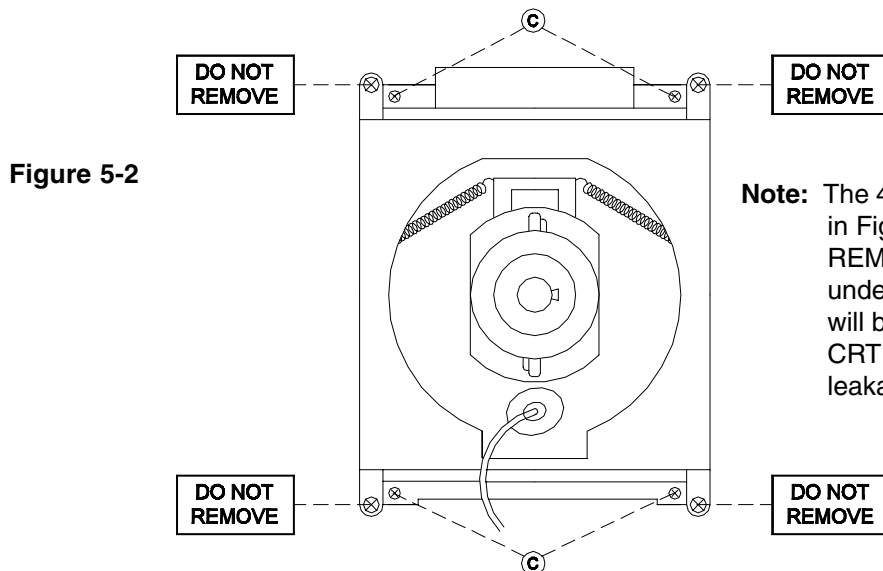
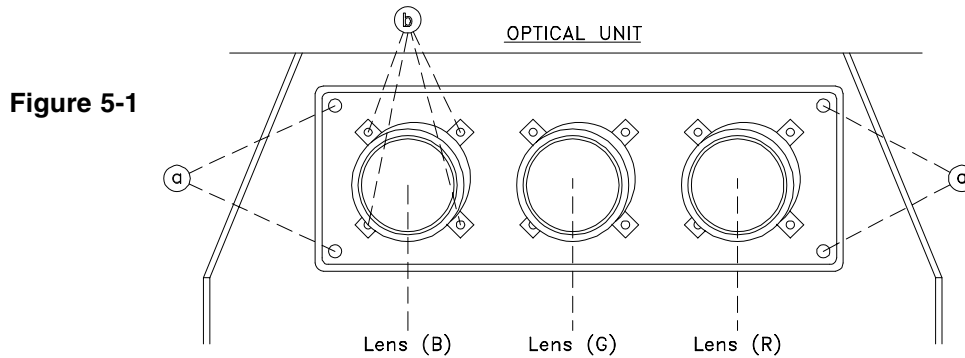
Caution! High voltage should be completely discharged prior to CRT removal. Since The CRTs receive high voltage from the CR Block, discharge by shorting the open end of the respective high voltage cable to chassis ground.

Note: Refer to figures 1-1 through 2-2 when performing steps 1 through 4.

1. Remove the Speaker Grille, Front Board, and Screen Assy.
2. Remove the Back Board.
3. Remove the Anode Lead Wire from the CR Block.
4. Remove the PCB-CRT.
5. Remove 4 hex-screws "a" retaining the Optical Unit. [Figure 5-1]
6. Remove 4 screws "b" retaining the Lens.

Note: DO NOT loosen the RED screws. Doing so will break the seal between the C-Element and the # 6 Lens, causing leakage of the CRT Coolant.

7. Remove 4 screws "c" retaining the CRT. [Figure 5-2]
8. Remove the Deflection Yoke from the neck of the CRT. [Figure 5-7]



2. Installation of the CRT

Note: The replacement CRT is supplied as an assembly comprised of the CRT and the Inner Lens with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Figure 5-3]

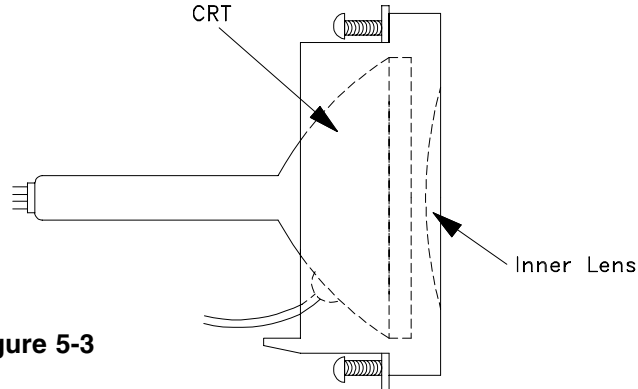


Figure 5-3

Note: The CRT fixing screws should not be loosened nor should they be removed. [Figure 5-4]

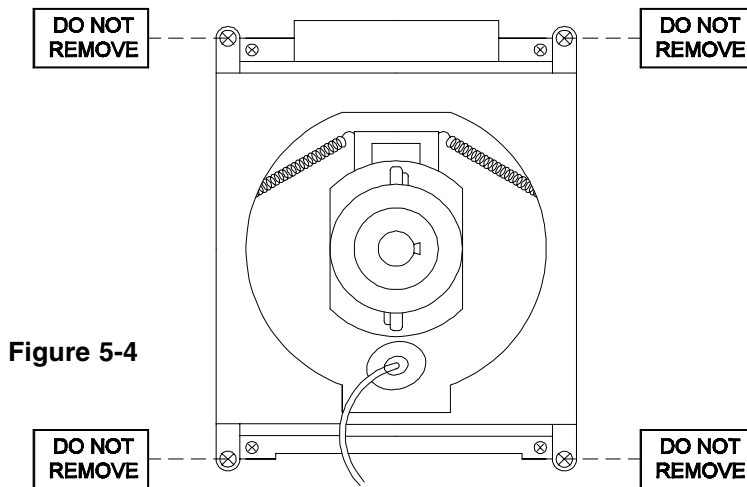


Figure 5-4

1. Carefully position the replacement CRT and fasten in place using 4 screws "d". [Figure 5-6]

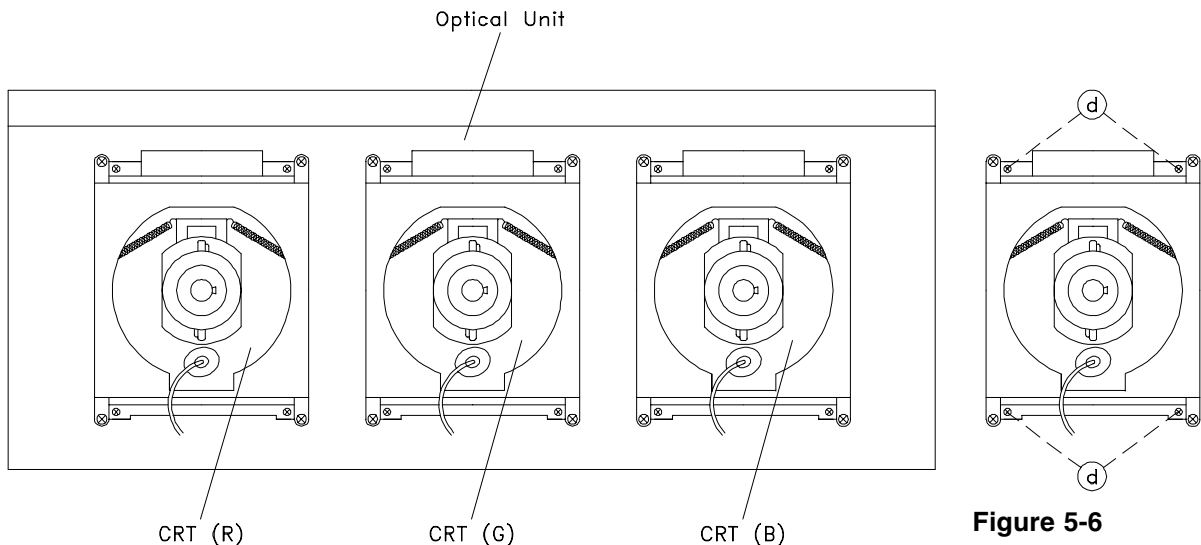


Figure 5-6

Figure 5-5

2. Install the Deflection Yoke on the CRT neck. [Figure 5-7]
3. Install the Lens that was removed in steps 5 and 6 of Removal Of The CRT. [Figures 5-1 and 5-2]
 - a) Position the Lens so that the Label faces the direction shown in Figure 5-8.
 - b) Install the mounting screws. [Figure 5-1]
4. Install the PCB-CRT.
5. Insert the Optical Unit into the Light Box Assembly.
6. Insert the Anode Lead Wire into the Flyback Transformer.
7. Re-clip the Lead Wire in its original position.

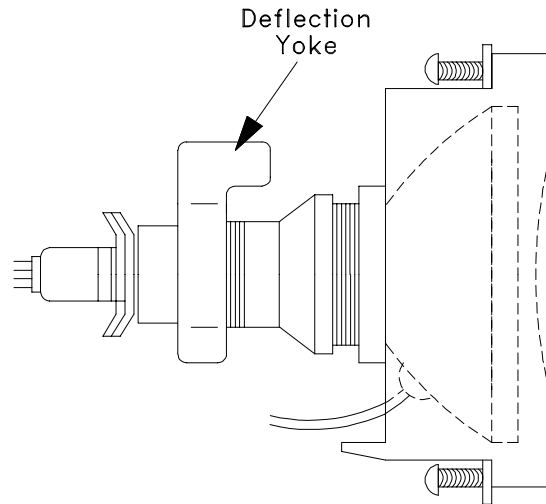
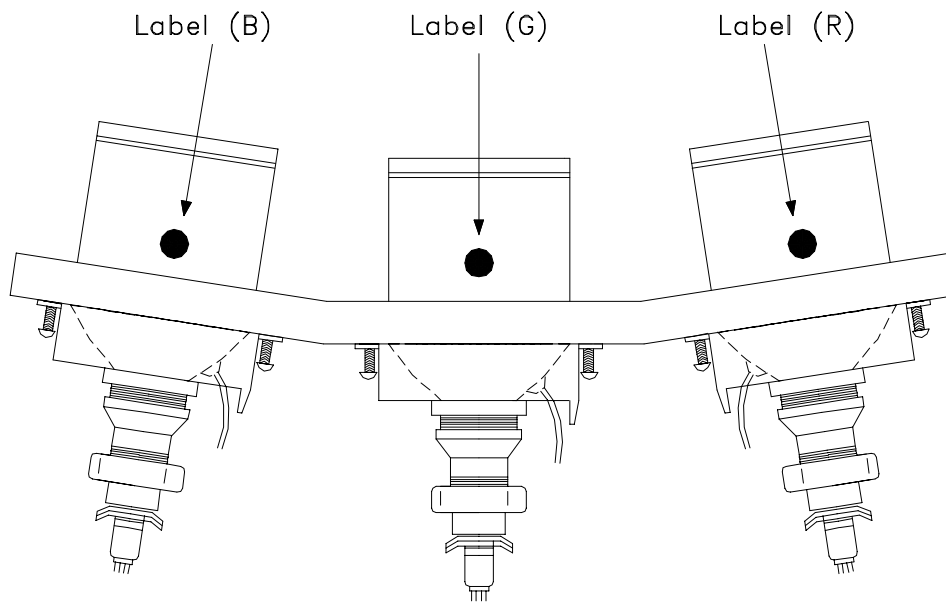


Figure 5-7



(Top View)

Figure 5-8

Adjustment procedures after replacing the CRT(s)

- CRT Cut Off / White Balance Adjustment
- Static Convergence Adjustment
- Dynamic Convergence Adjustment

ELECTRICAL ADJUSTMENTS

Note: Perform only the adjustments required.
Do not attempt an alignment if proper equipment is not available.

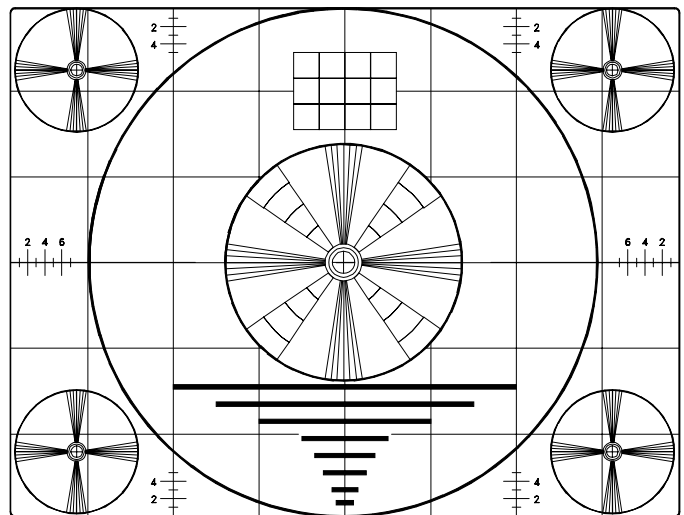
1. Test Equipment

- Oscilloscope (Unless otherwise specified, use 10:1 probes)
- Signal Generator
- Frequency Counter
- Direct Current Voltmeter
- Direct Current Power Supply
- Multiplex Audio Signal Generator
- Direct Current Ampere Meter

2. Test Signal

A. Monoscope Signal

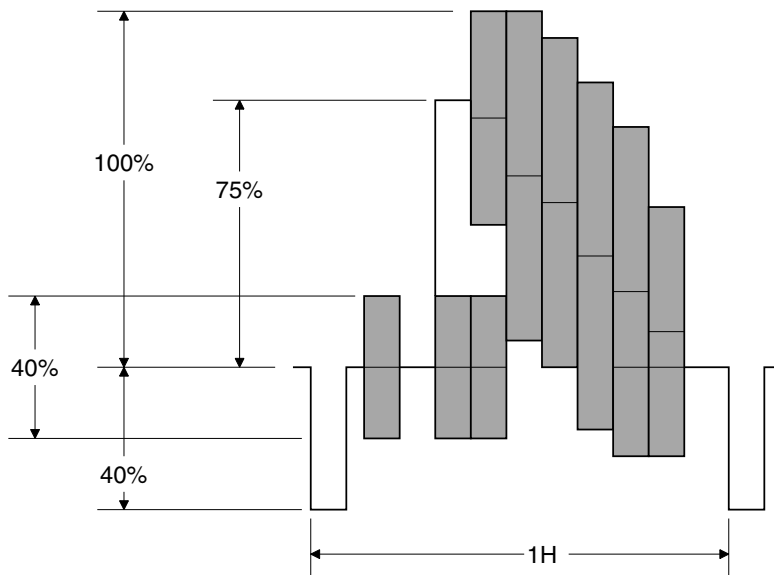
Note: If you do not have a monoscope signal source, connect the unit to a VCR and play a Monoscope *alignment tape.
*alignment tape.
(* Part Number: 859C568060)



Monoscope Signal

B. Color Bar Signal

Use the color bar signal shown below, unless otherwise specified in this manual.



Split-Field Color Bars (100% window)

3. Initial Setup

1. Option Menu Setup

Follow the steps below for the initial set-up:

1. Select the "MENU" display by pressing the "MENU" button once.
2. Press the number buttons "0", "1", "7", "0" in sequence to select the "OPTION MENU" display.
3. Press the "ADJUST" button to select "INITIAL."
4. Press "ENTER."

NOTE: At this time channel 3 is automatically selected.

OPTION MENU (MENU-0-1-7-0)

INITIAL	
POWER RESTORE	:OFF
DIRECT KEY MODE	:OFF
VIDEO MUTE TIME OUT	:OFF

2. Default Settings

INITIAL SETTINGS

Item	Description	Initial Setting	Item	Description	Initial Setting
1	Input	TV	11	TV Brightness	50%
2	Receiving Channel	003 CH		TV Sharpness	50%
3	TV/CATV	CATV		TV Color	50%
4	QV	Recalls previous ch.	12	Speaker	ON
5	Channel Memory	All CH (0,0)	13	Background	Gray
6	V-CHIP LOCK	OFF	14	Closed Caption	On if Mute
	Lock by Time	OFF	15	PIP SOURCE	TV
	Lock Time	12:00 AM	16	PIP POSITION	Lower Right
	Unlock Time	12:00 AM	17	VIDEO MUTE	OFF
7	Lock Channels	OFF	18	INPUT, NAME	All inputs name OFF
8	LOCK CODE	- - - -	19	TIMER	OFF
9	VOLUME	30%	20	SQV	All Ch Clear (deleted)
10	AUDIO FUNCTIONS	STEREO	21	SYSTEM 4*	OFF
	TV Listen to	STEREO	22	LANGUAGE	English
	TV Bass	50%	23	Name The Channels	All Labels Cleared
	TV Treble	50%	24	Locked to Input	No
	TV Balance	50%	25	External Audio System	No
	TV Surround	OFF	26	Vol. change by AV Rec.	N/A
11	VIDEO FUNCTIONS	50%	27	Auto Clock Setting	OFF
	TV Tint	50%	28	Front Lock Function	OFF
	TV Color temp	High	29	PIP Demo Mode	OFF
	TV Noise Reduction	OFF	30	Clock Time	- -: - -
	TV Contrast	100%	31	Set Day	Sunday

* Note: System 4 in VS-60719 & VS-70709 only

Items in the table below are set to following after Initalization.

AV MEMORY

AV MEMORY	All Inputs
TINT	31
COLOR	31
CONTRAST	63
BRIGHTNESS	31
SHARPNESS	31
COLOR TEMP	HIGH
BASS	31
TREBLE	31
BALANCE	31
SURROUND	OFF
LEVEL SOUND	OFF

4. LED Indicator Diagnostics

The “Power ON LED” provides an indication of the sets operation, and the possible cause of a malfunction.

1. Initial Control Circuitry Check

Immediately after the TV is connected to an AC power source:

- The LED flashes three times ... indicating the Microprocessor has initialized and is functioning properly.
- If the LED does not flash ... the Microprocessor is NOT functioning.

2. Error Code Operational Check

Pressing the front panel “INPUT” and “MENU” buttons at the same time, and holding for 5 seconds, activates the Error Code Mode. The LED flashes denoting a two digit Error Code, or indicating no problem has occurred since the last Initalization.

Note: The front panel buttons must used, NOT those on the Remote Control.

- The number of flashes indicates the value of the MSD (tens digit) of the Error Code.
- The flashing then pauses for approximately 1/2 second.
- The LED then flashes indicating the value of the LSD (ones digit) of the Error Code.
- The Error Code is repeated a total of 5 times.
 Example: If the Error Code is “24”, the LED will flash two times, pause, and then flash four times.

3. Error Codes

The Error Code designations indicating a malfunction, or no malfunction, are listed below:

- “12” ... indicates no error has occurred.
- “21” ... X-Ray Protect circuit.
- “22” ... Short Protect circuit.
- “23” ... Horizontal Deflection failure.
- “24” ... Vertical Deflection failure.

5. Circuit Adjustment Mode

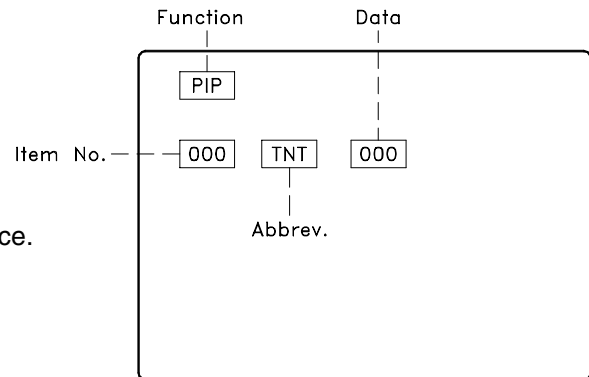
Except for the following, all adjustment items must be performed using the remote hand unit.

- Lens Focus
- Electrostatic Focus

A. Activating the Circuit Adjustment Mode

1. Press the "MENU" button on a remote hand unit.
2. Press the number buttons "0", "1", "5", "7" in sequence. The screen will change to the Adjustment Mode.

Note: Repeat steps 1 and 2 if the circuit adjustment mode does not appear on screen

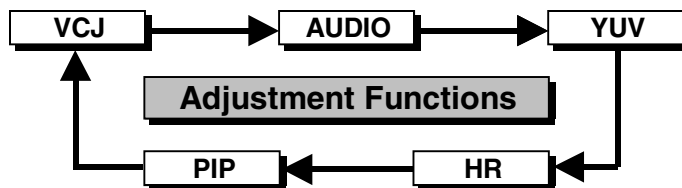


B. Selection of adjustment Functions and Adjustment Items

To select an adjustment item in the circuit adjustment mode, first select the adjustment function that includes the specific adjustment item to be selected. Then, select the adjustment item.

Refer to the following pages for the listing of adjustment functions and adjustment items.

1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the Function changes in the following sequence:

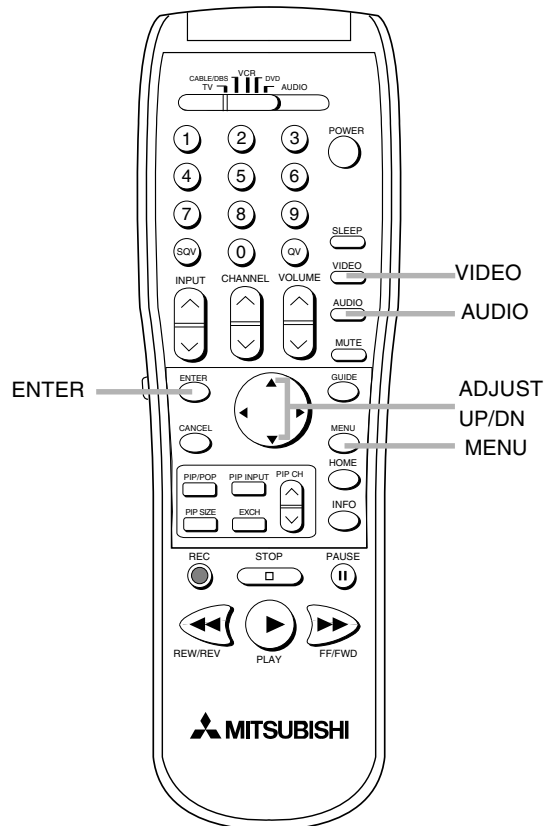


2. Press the "VIDEO" button to select a specific Adjustment Item. The Item number increases each time the "VIDEO" button is pressed.

C. Changing Data

After selecting an adjustment Item, use the "ADJUST UP/DOWN" button to change data.

- Press "ADJUST DOWN" to decrease the data value.
- Press "ADJUST UP" to increase the data value.



D. Saving Adjustment Data

Press “ENTER” to save adjustment data in memory. The character display turns red for approximately one second in this step.

Note: If the circuit adjustment mode is terminated without pressing “ENTER”, changes in adjustment data are not saved.

E. Terminating the Circuit Adjustment Mode

Press the “MENU” button on the remote hand unit twice to terminate the adjustment mode.

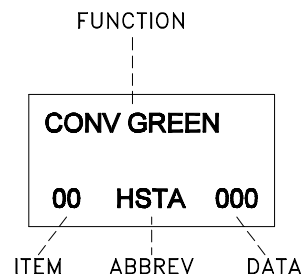
Note: The circuit adjustment mode can also be terminated by turning power OFF.

7. Convergence Adjustment Mode

The Convergence mode is used to perform raster geometry correction, and convergence adjustments as specified in Adjustment Procedures 15, 17, 18, 19 and 20.

A. Convergence Mode Activation

1. Press MENU-0-1-5-9
2. When the Convergence Mode is activated, the display at the right appears on a Green Crosshatch.



B. Convergence Mode Functions

In the Convergence Mode there are three main Functions (Categories).

- Pressing “6” activates CONV MISC
- Pressing “5” activates COARSE CONV
- Pressing “4” activates FINE CONV

C. CONV MISC (Press 6)

This mode is used to preset data values controlling the Convergence Generator, and to perform the HV Regulation adjustment.

1. Use the VIDEO button to select an item.
2. Use the ADJUST buttons to change data.

Note: When Item “1 HVOL” is selected the screen goes black except for the data display. This occurs since a black screen is required when making the HV Regulation adjustment.

D. COARSE CONV (Press 5)

There are four Sub Functions in the Coarse mode, COARSE GREEN, COARSE RED, COARSE BLUE and DF.

- COARSE GREEN used to make Coarse Raster Geometry Adjustments.
- COARSE RED ... used to make Coarse Red Convergence Adjustments.
- COARSE BLUE ... used to make Coarse Blue Convergence Adjustments.
- DF ... used to preset data values controlling the Dynamic Beam Focus circuit drive signal.

1. Use AUDIO button to select a Sub Function
2. Use the VIDEO button to select an Adjustment Item.
3. Use the ADJUST buttons to change data.

E. FINE CONV (Press 4)

Sub Functions

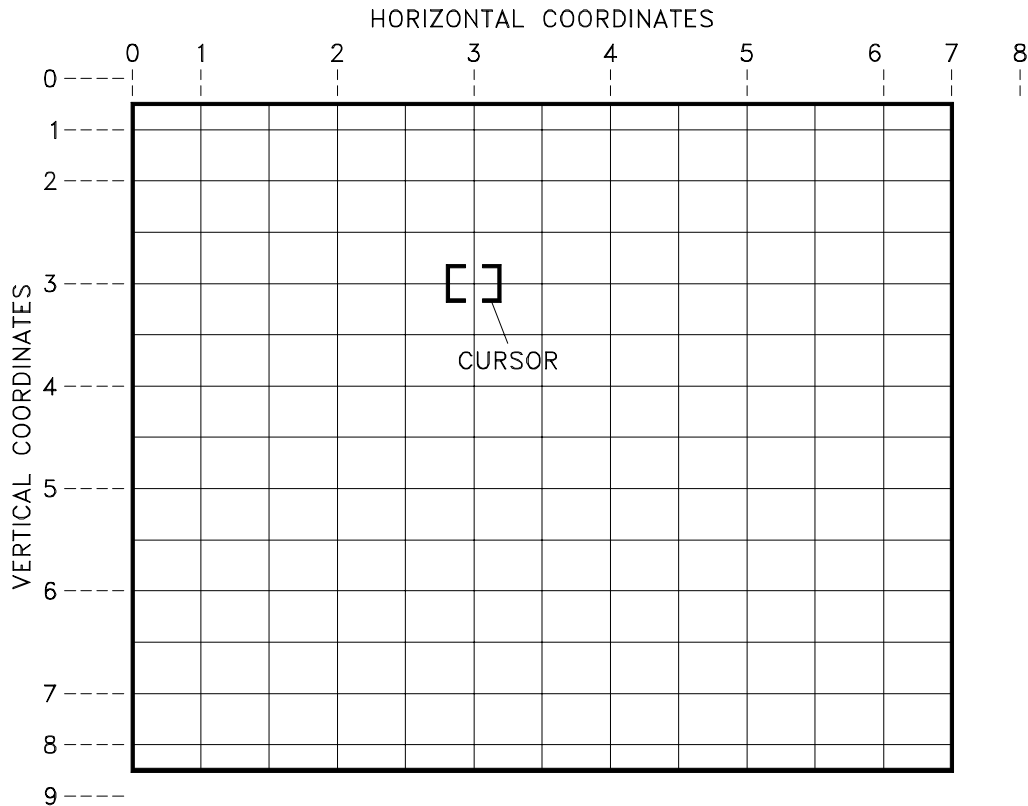
This mode is used to perform Fine Raster Correction, and Fine Red and Blue Convergence Adjustments. There are three Sub Adjustment Functions, selected with the AUDIO button:

- FINE GREEN a Green Crosshatch is displayed, for Fine Raster Corrections.
- FINE RED a White Crosshatch is displayed, for Fine Red Convergence Adjustments.
- FINE BLUE a White Crosshatch is displayed, for Fine Blue Convergence Adjustments.

Cursor

In the Fine mode a Cursor is added to the Crosshatch. The ENTER button toggles the Cursor between two modes:

- MOVE (blinking Cursor) use the ADJUST buttons to select any of 64 points on the Crosshatch.
- ADJUST (Non blinking Cursor) the ADJUST buttons adjust the active color at the current Cursor position, horizontally or vertically.



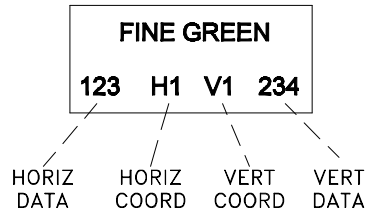
Fine Mode Crosshatch and Cursor

Cursor Coordinates

Specific intersections in the Crosshatch are assigned vertical and horizontal coordinates. These are shown in the above diagram. The Cursor can only be moved to those positions that have coordinates assigned. If the Cursor is at coordinates outside the screen area, the Cursor will not be visible. Use the ADJUST buttons to move the Cursor to an intersection on the screen.

Display

The on-screen display changes in the Fine mode, as shown below. The display shows the vertical and horizontal data for the current Cursor Position, and the horizontal and vertical coordinates for that position.



F. Saving Data and Exiting the Convergence Mode

Press MENU twice to exit the Convergence mode, data is automatically saved.

Note: If power is interrupted prior to properly exiting the Convergence Mode, changes in adjustment data will not be saved.

ADJUSTMENT ITEMS LIST

When Replacing the EEPROM (IC701)

The EEPROMs (IC701 and IC801) store the adjustment data. After replacing the EEPROM, readjust the data to the values given in the following tables. If good performance is not obtained with these values, perform the Adjustment Procedure(s) given in the Notes column.

VCJ Function

Item No.	Abbrev.	Description	Range 0 ~ ●●●	Initial Data	Service Adjustment
1	SCT	Sub Contrast	63	55	Sub Contrast
2	VHGT	Height	63	31	Vertical Height
3	SCOR	S-Distortion	15	7	
4	VLIN	Vertical Linearity	15	7	Vertical Linearity
5	UPVL	Top Vertical Linearity	15	0	
6	LOVL	Bottom Vertical Linearity	15	0	
7	BRTH	Brightness Control (high)	63	31	Black Level
8	CTRH	Red Cutoff (high temp.)	15	7	White Balance (high)
9	CTGH	Green Cutoff (high temp.)	15	10	CRT Cutoff
10	CTBH	Blue Cutoff (high temp.)	15	7	White Balance (high)
11	RDRH	Red Drive (high temp.)	63	31	White Balance (high)
12	GDR	Green Drive	63	51	
13	BDRH	Blue Drive (high temp.)	63	31	White Balance (high)
14	CTRL	Red Cutoff (low temp)	15	7	White Balance (low)
15	CTGL	Green Cutoff (low temp)	15	10	
16	CTBL	Blue Cutoff (low temp)	15	7	White Balance (low)
17	RDRL	Red Drive (low temp.)	63	31	White Balance (low)
18	BDRL	Blue Drive (low temp.)	63	31	White Balance (low)
23	CBOF	Cb Offset	15	7	Cb, Cr Offset
24	CROF	Cr Offset	15	7	Cb, Cr Offset
25	SHUE	Sub Hue Control	15	7	
26	SCOL	Sub Color Gain	15	12	
27	SCON	Sub Contrast Control	15	7	
28	AG-1	Aging Mode On/Off	1	0	
30	COLH	Color Gain high	63	27	Cb, Cr Offset
51	VPOS	V-Drive DC bias	63	31	
55	HPOS	Horiz. Position	63	34	

AUDIO Function

Item No.	Abbrev.	Description	Range 0 ~ ●●●	Initial Data	Service Adjustment
1	INP	Input Level	15	7	Audio Input Level
2	AUT	Auto Alignment Off/On Sw.	1	0	
3	WDE	Wideband Separation	31	16	Separation
4	SPC	Spectral Separation	31	16	Separation

PIP Function

Item No.	Abbrev.	Description	Range 0~...	Initial Data	Service Adjustment
1	HUE	Sub Picture Hue	63	0	Sub Picture Tint
2	CSAT	Sub Picture Color Saturation	15	0	Sub Picture Color
3	CONT	Sub Picture Contrast	15	7	Sub Picture Contrast
4	BLKR	RED Output Pdestal Level	15	0	
5	BLKG	GREEN Output Pdestal Level	15	0	
6	BLKB	BLUE Output Pdestal Level	15	0	
7	BRIT	Sub Picture Brightness	15	0	
8	PON	PIP On/Off	1	0	

YUV Function

Item No.	Abbrev.	Description	Range 0 ~ ●●●	Initial Data	Service Adjustment
28	PEAK	Peaking Amplitude Adjust	63	40	

HR Function

Item No.	Abbrev.	Description	Range 0 ~ ●●●	Initial Data	Service Adjustment
1	HR	OSD Horiz. Position	15	7	Display Centering

CONVERGENCE MODE ITEMS

CONV MISC

Item	Abbr.	Data	Description
1	HVOL	200	High Voltage Control
2	VCNT	62	Vertical correction signal increment per line
3	VSTR	0	Start point of vertical correction
4	VOFS	0	V Offset
5	STLN	20	Horiz. Correction signal start line number
6	FPHS	300	Fine H-phase of correction signal
7	CPHS	15	Coarse H-phase of correction signal
8	HOFS	16	H Offset
9	DPHS	13	Dynamic Focus H-phase
10	D0FS	0	Dynamic Focus Offset
11	TPHS	50	Test pattern H-phase
12	TPVO	13	Test pattern V-position
13	ODEV	24	Odd/Even detection
14	HRTC	1	Horizontal Retrace
15	DRTC	1	DBF retrace
16	EPWP	0	EEPROM write protection

CONV GREEN

Item	Abbr.	Data	Description
1	HSTA*	0	Horiz. Position
2	VSTA*	0	Vertical Position
3	SKEW	0	Skew (Y axis rotation)
4	TILT	0	Tilt (X axis rotation)
5	HWID	30	Width
6	HLIN	0	Horizontal Linearity
7	SPCC	-125	Side Pin Cushion Correction
8	HKEY	30	Horizontal Keystone
9	TBPC	-230	Top/Bottom Pin Cushion Correction
10	VKEY	-10	Vertical Keystone Correction
11	VWID	0	Height
12	VLIN	0	Vertical Linearity

*HSTA & VSTA data should not exceed ±100

CONV RED

Item	Abbr.	Data	Description
1	HSTA*	100	Horiz. Position
2	VSTA*	0	Vertical Position
3	SKEW	0	Skew (Y axis rotation)
4	TILT	0	Tilt (X axis rotation)
5	HLIN	-270	Horizontal Linearity
6	HWID	-60	Width
7	VKEY	-170	Vertical Keystone Correction
8	VWID	0	Height
9	VLIN	0	Vertical Linearity
10	TBPC	0	Top/Bottom Pincushion Correction
11	SDBW	80	Horizontal Bow

*HSTA & VSTA data should not exceed ± 100

CONV BLUE

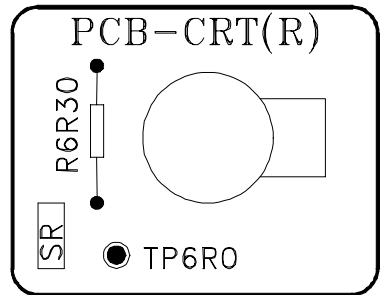
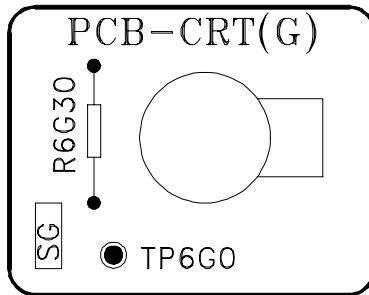
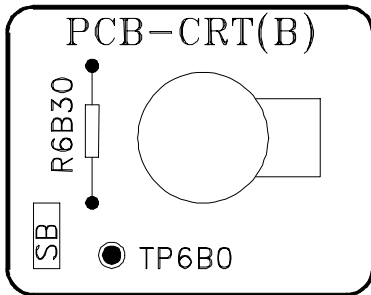
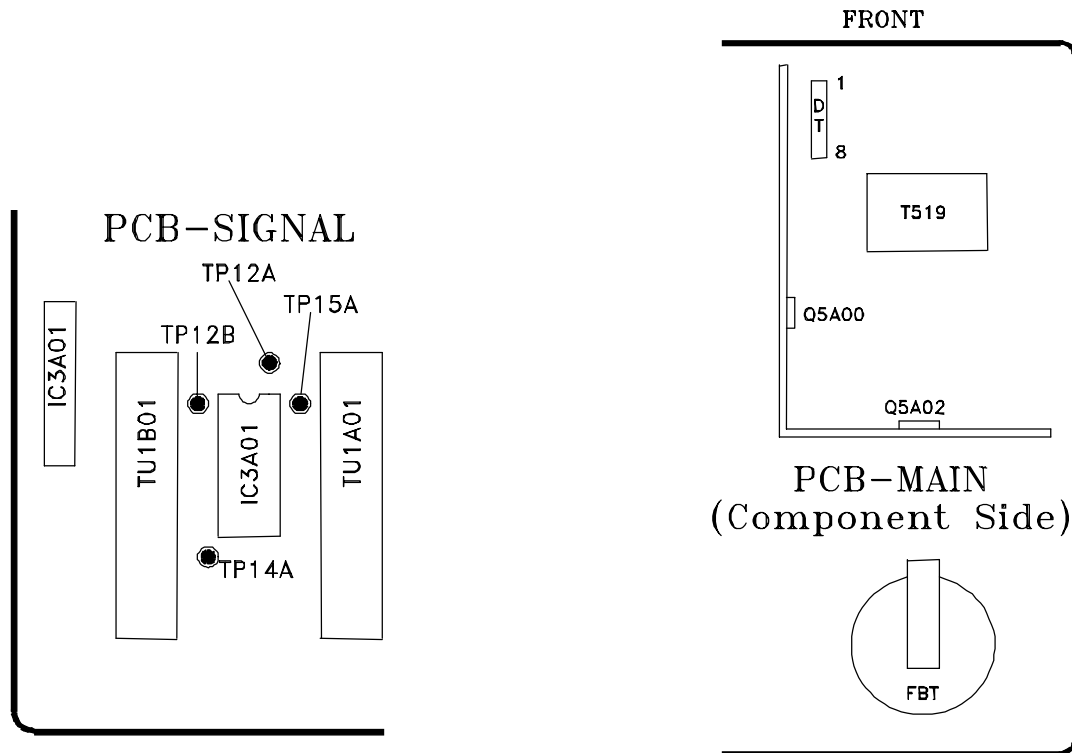
Item	Abbr.	Data	Description
1	HSTA*	-100	Horiz. Position
2	VSTA*	0	Vertical Position
3	SKEW	0	Skew (Y axis rotation)
4	TILT	0	Tilt (X axis rotation)
5	HLIN	280	Horizontal Linearity
6	HWID	-50	Width
7	VKEY	150	Vertical Keystone Correction
8	VWID	0	Height
9	VLIN	0	Vertical Linearity
10	TBPC	0	Top/Bottom Pincushion Correction
11	SDBW	-70	Horizontal Bow

*HSTA & VSTA data should not exceed ± 100

DF Function

Item	Abbr.	Data	Description
0	DFH	200	Dynamic Focus (Horizontal)
1	DFV	100	Dynamic Focus (Vertical)

Location of Test Points and Adjustments

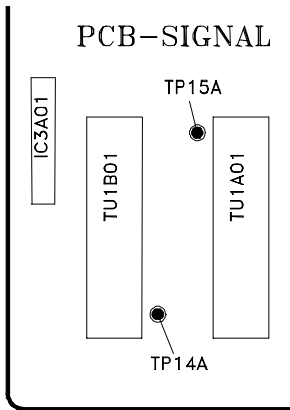


[Audio Circuit]		Purpose: Set the input signal level to the MCS circuit.
1. Input Level		Symptom: Distorted sound during a stereo broadcast.

Measuring Instrument	Oscilloscope
Test Point	TP14A, TP15A
Ext. Trigger	-----
Measuring Range	50mV/Div
Input Signal	RF Monaural 300 Hz modulation
Input Terminal	RF Input

1. Supply an RF monaural signal to the Ant A input, 300 Hz at 100% modulation (25 kHz deviation).
2. Connect the oscilloscope to TP15A (Right Channel). (Junction of R2K64 and R3A38)
3. Enter the Adjustment Mode and select the Audio Function.
4. Verify that the Audio Function items are set to the data values given the table below.
5. Adjust Item "1 INP" for 1.55 ±0.06 Vp-p at TP15A.
6. Connect the oscilloscope to TP14A. (Junction of R2K62 and R3A15)
7. Confirm that the left channel output at TP14A is 1.55 ±0.06 Vp-p.

Note: Adjustment 2 (Stereo Separation) must be performed after this adjustment)



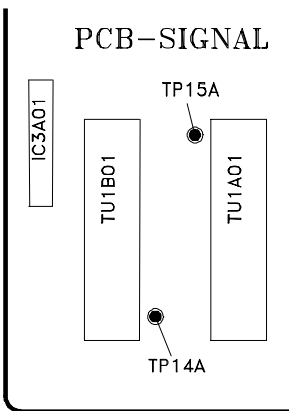
SERVICE MODE		
Activate	MENU-0-1-5-7	
Function	AUDIO	
Item No.	VIDEO	
Adjust Data	ADJUST	
Save Data	ENTER	
Exit	MENU (twice)	

AUDIO Function		
Item	Abbrev.	Data
1	INP	7
2	AUT	0
3	WDE	16
4	SPC	16
15	MZX	1
16	VZX	1
20	ATK	1

[Audio Circuit]		Purpose: Adjust for optimum stereo separation.
2. Separation		Symptom: Poor stereo separation

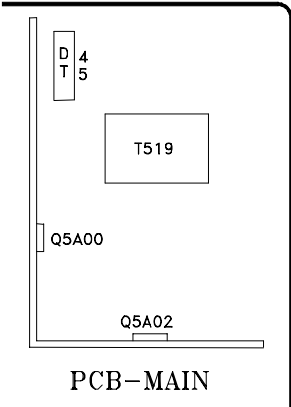
Measuring Instrument	Oscilloscope
Test Point	TP14A, TP15A
Ext. Trigger	-----
Measuring Range	10mV/Div
Input Signal	RF Stereo
Input Terminal	RF Input

- Note:** This adjustment must follow Adjustment 1 (Input Level)
1. Supply a RF Stereo Signal to the Ant. A input.
 - Left Channel = 300 Hz modulation
 - Right Channel = no modulation signal
 2. Connect the oscilloscope to TP15A (right channel). (Junction of R2K64 and R3A38)
 3. Enter the Service Mode and select the Audio Function.
 4. Adjust Item "3 WDE" for minimum signal at TP15A.
 5. Change the modulation frequency to 3 kHz.
 6. Adjust Item "4 SPC" for minimum signal at TP15A.



SERVICE MODE		
Activate	MENU-0-1-5-7	
Function	AUDIO	
Item No.	VIDEO	
Adjust Data	ADJUST	
Save Data	ENTER	
Exit	MENU (twice)	

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[High Voltage Circuit]	Purpose: To set the CRTs anode voltages												
3. High Voltage Control	Symptom: Dark picture.												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Measuring Instrument</td> <td>DC Voltmeter</td> </tr> <tr> <td>Test Point</td> <td>+ Lead to DT #5 - Lead to DT #4</td> </tr> <tr> <td>Ext. Trigger</td> <td>-----</td> </tr> <tr> <td>Measuring Range</td> <td>-----</td> </tr> <tr> <td>Input Signal</td> <td>Monoscope</td> </tr> <tr> <td>Input Terminal</td> <td>Video Input</td> </tr> </table>	Measuring Instrument	DC Voltmeter	Test Point	+ Lead to DT #5 - Lead to DT #4	Ext. Trigger	-----	Measuring Range	-----	Input Signal	Monoscope	Input Terminal	Video Input	<ol style="list-style-type: none"> 1. Supply a Monoscope signal to a Video Input. 2. Connect a DC Voltmeter to pins 4 and 5 of the DT connector. <ul style="list-style-type: none"> • Positive Lead to DT #5 • Negative Lead to DT #4 3. Set Contrast to maximum, and Brightness to the center position. 4. Enter the Service Mode and check that Item "7 BRTH" under the VCJ Function is set at 31. 5. Press Enter and Exit the Service Mode. 6. Enter the Convergence Mode and select the Conv. Misc Function. 7. Select Item "1 HVOL" (screen goes black). 8. Adjust "1 HVOL" for 0.15 ± 0.01 V on the meter. 9. Exit the Convergence Mode and verify that the meter reading does not exceed 0.85V.
Measuring Instrument	DC Voltmeter												
Test Point	+ Lead to DT #5 - Lead to DT #4												
Ext. Trigger	-----												
Measuring Range	-----												
Input Signal	Monoscope												
Input Terminal	Video Input												
 <p style="text-align: center;">PCB-MAIN</p>	<p>Note: HV must be reset if E2RESET is activated.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">SERVICE MODE</p> <p>Activate MENU-0-1-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">CONVERGENCE MODE</p> <p>ActivateMENU-0-1-5-9 Misc."6" Coarse....."5" Fine "4" Color (R,G B or DF)...AUDIO Item No.....VIDEO Adjust/Move.....ADJUST Cursor Toggle.....ENTER Save & Exit.....MENU (twice)</p> </div>												

[Focus]	Purpose: To improve edge focus												
4. Dynamic Focus	Symptom: Blurred picture at the edges of the screen.												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Measuring Instrument</td> <td>-----</td> </tr> <tr> <td>Test Point</td> <td>-----</td> </tr> <tr> <td>Ext. Trigger</td> <td>-----</td> </tr> <tr> <td>Measuring Range</td> <td>-----</td> </tr> <tr> <td>Input Signal</td> <td>Monoscope</td> </tr> <tr> <td>Input Terminal</td> <td>Video Input</td> </tr> </table>	Measuring Instrument	-----	Test Point	-----	Ext. Trigger	-----	Measuring Range	-----	Input Signal	Monoscope	Input Terminal	Video Input	<ol style="list-style-type: none"> 1. Supply a Monoscope signal to the Video Input. 2. Enter the Coarse Convergence Mode and select the DF Function. 3. Verify that the data values are set as indicated in the table below. 4. Exit the Convergence Mode.
Measuring Instrument	-----												
Test Point	-----												
Ext. Trigger	-----												
Measuring Range	-----												
Input Signal	Monoscope												
Input Terminal	Video Input												
	<div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">DF Function</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Item</th> <th>Abbrev.</th> <th>Data</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>DFH</td> <td>200</td> </tr> <tr> <td>1</td> <td>DFV</td> <td>100</td> </tr> </tbody> </table> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">CONVERGENCE MODE</p> <p>ActivateMENU-0-1-5-9 Misc."6" Coarse....."5" Fine "4" Color (R,G B or DF)...AUDIO Item No.....VIDEO Adjust/Move.....ADJUST Cursor Toggle.....ENTER Save & Exit.....MENU (twice)</p> </div>	Item	Abbrev.	Data	0	DFH	200	1	DFV	100			
Item	Abbrev.	Data											
0	DFH	200											
1	DFV	100											

[Focus] 5. Electrostatic Focus		Purpose: To set focus to the optimum point. Symptom: Blurred picture.
Measuring Instrument	-----	Note: <i>These adjustments must be performed after Sub Contrast Adjustment.</i> General 1. Reset the AV Functions 2. Red, green or blue rasters can be activated by using the Convergence Mode (Table 1). Electrostatic Focus 1. Supply a Monoscope signal to the Video Input. (<u>Do Not</u> use a Crosshatch.) 2. Activate a red raster. 3. Adjust the Red VR-FOCUS for optimum focus. 4. Repeat steps 2 and 3 for green and blue rasters. Focus Verification 1. Supply a Crosshatch signal to the Video Input. 2. Verify good focus on the Crosshatch 3. If necessary, readjust focus using the Monoscope pattern.
Test Point	RQ Connector	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope/Crosshatch	
Input Terminal	Video Input	

CONVERGENCE MODE (MENU-0-1-5-9)

COLOR	PRESS
RED	1
GREEN	2
BLUE	3

[Focus] 6. Lens Focus		Purpose: To set the Lens position for optimum focus Symptom: Blurred picture.
Measuring Instrument	-----	Note: <i>This adjustment must follow item 6 (Electrostatic Focus). Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.</i> 1. Supply a VIDEO signal (Monoscope). 2. Cover the Red and Blue Lens (producing a green raster). 3. Adjust the Green Lens for best focus at the center of the Monoscope pattern. Note: <i>Attach a white paper to the screen center. During adjustment, observe the picture on the screen from inside for easier adjustment.</i> 4. Repeat Steps 2 and 3 for the Red and Blue monochrome pictures. 5. Supply a crosshatch pattern and confirm the crosshatch lines at all four sides are the same width. 6. If not, check the Centering and Static Convergence adjustments.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope	
Input Terminal	Video Input	

The diagram illustrates the internal lens assembly and screen. A white paper is attached to the screen center. A viewing angle is indicated by a dashed line.

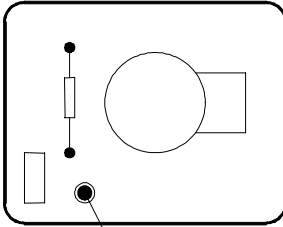
MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[CRT Circuit]		Purpose: To set the cutoff point for all three CRTs.
7. CRT Cutoff		Symptom: Monochrome has a color tint, or incorrect brightness.
Measuring Instrument	Oscilloscope	<ol style="list-style-type: none"> 1. Select an External Input with no signal. 2. Enter the Service Mode, VCJ Function. 3. Set the data to the values given for the Items listed in the Table. 4. Connect the oscilloscope to TP6R. 5. Adjust the Red SCREEN VR so the black level is 200V, as shown below, or to 206 ±1VDC using a DC Voltmeter. 6. Repeat Steps 4 and 5 to set the Blue and Green SCREEN VRs, using TP6G and TP6B. <p>Note: <i>The White Balance Adjustment must be performed after Cutoff Adjustment.</i></p>
Test Point	TP6R, TP6G, TP6B	
Ext. Trigger	-----	
Measuring Range	50V per division/ 2 msec	
Input Signal	None	
Input Terminal	Video Input	

SERVICE MODE

Activate MENU-0-1-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

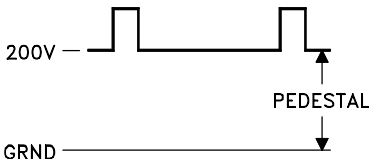
PCB-CRT(R/G/B)



(TP6R0/TP6G0/TP6B0)

VCJ Function

ITEM	ABBR.	DATA
7	BRTH	31
8	CTRH	7
9	CTGH	10
10	CTBH	7

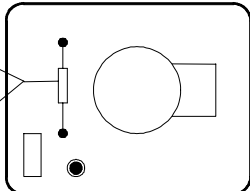


[CRT Circuit]		Purpose: To set the CRTs white level
8. White Balance (High Color Temperature)		Symptom: Monochrome has a color tint.
Measuring Instrument	DC Meter	<p>Note: <i>This adjustment must be performed after the CRT Cutoff and Focus Adjustments.</i></p> <p>High Color Temperature White Balance</p> <ol style="list-style-type: none"> 1. Supply a Full White Raster signal to the Video Input. 2. Enter the Service Mode, VCJ Function. 3. Adjust Items "11 RDRH" and "13 BDRH" for optimum white at the center of the screen. <p>Note: <i>If the Cutoff level changes during the adjustment, use Items "8 CTRH" and "10 CTBH" to touch up the Cutoff level. Then readjust "RDRH" and "BDRH".</i></p> <ol style="list-style-type: none"> 4. Save data and exit the Service Mode. 5. Use a DC Current Meter to measure each CRT's current. <ul style="list-style-type: none"> • The meters internal resistance must be less than 30 Ohms. • Lead length must be less than 30 CM. 6. Connect the meter, in sequence, across each of the following resistors to read the current for that respective CRT. <ul style="list-style-type: none"> • Green CRT ... across R6G30 • Blue CRT across R6B30 7. The Green and Blue CRT current must not exceed the values given in Table 1.
Test Point	R6G30, R6B30	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Full White Raster	
Input Terminal	Video Input	

SERVICE MODE

Activate MENU-0-1-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

PCB-CRT(R/G/B)



Maximun CRT Current

CRT	CURRENT
Green	580 ua
Blue	530 ua

Table 1

[CRT Circuit]		Purpose: To set the CRTs white level at Low Color Temperature.
9. White Balance (Low Color Temperature)		Symptom: Monochrome has a color tint.
Measuring Instrument	-----	<p>Note: <i>This adjustment should be performed after the High temperature White Balance Adjustment.</i></p> <p>Low Color Temperature White Balance</p> <ol style="list-style-type: none"> 1. Supply a Full White Raster signal to the Video Input. 2. Enter the Service Mode, VCJ Function. 3. Adjust Item "17 RDRL" and "18 BDRL" for optimum white at the center of the picture. <p>Note: <i>If the Cutoff level changes during the adjustment, use Items "14 CTRL" and "16 CTBL" to touch up the Cutoff level. Then readjust "RFRL" and "BDRL".</i></p> <ol style="list-style-type: none"> 4. Save data and exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Full White Raster	
Input Terminal	Video Input	

SERVICE MODE

Activate MENU-0-1-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

[Video Circuit]		Purpose: To set black level of the picture.
10. Black Level		Symptom: Excessive or insufficient contrast.
Measuring Instrument	-----	<p>Note: <i>This adjustment should be performed after the Cutoff and White Balance Adjustments.</i></p> <ol style="list-style-type: none"> 1. Supply a Monoscope signal to the Video Input. 2. Enter the Service Mode, VCJ Function. 3. Adjust Item "7 BRTH" so the 0% and 10% gradation levels on the Monoscope pattern are the same. (Data should be within 31 ±4 range) 4. Save the data and exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope	
Input Terminal	Video Input	

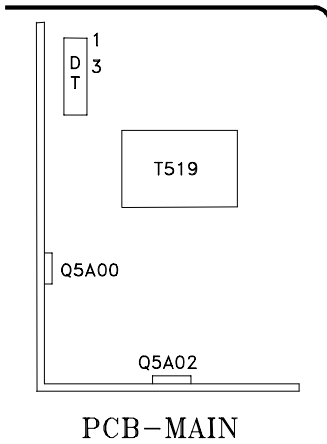
SERVICE MODE

Activate MENU-0-1-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

40%	30%	20%	10%
50%	0%	0%	0%
60%	70%	80%	90%

GRADATION SCALE

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[Video Circuit] 11. Sub Contrast		Purpose: To set the beam current to its' optimum level. Symptom: Excessive or insufficient contrast.
Measuring Instrument	DC milliammeter	Note: <i>This adjustment must follow the Black Level Adjustment.</i> 1. Supply a Grayscale signal to the Video Input. 2. Enter the Service Mode, VCJ Function. 3. Select Item "1 SCT", before going to Step 4. 4. Connect the DC milliammeter to the DT connector. • Positive lead to pin 3 • Negative lead to pin 1 5. Adjust Item "1 SCT" to set the total CRT current value to 860 ±15ua. 6. Disconnect the meter. 7. Save data and exit the Service Mode.
Test Point	+ DT #3 - DT #1	
Ext. Trigger	-----	
Measuring Range	3 MA	
Input Signal	Grayscale	
Input Terminal	Video Input	
<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p align="center"><u>SERVICE MODE</u></p> Activate MENU-0-1-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice) </div>		 <p align="center">PCB-MAIN</p>

[PIP Circuit] 12. Color and Tint (PIP Insert Picture)		Purpose: To match the main and sub pictures color. Symptom: Different color between the main and sub pictures.
Measuring Instrument	-----	1. Supply a Color Bar signal to the Video or RF Input. 2. Select the Color Bars as the source for the main picture (Input button). 3. Activate the single insert PIP mode . 4. Select the Color Bars as the PIP source. 5. Exit the PIP mode (PIP button) 6. Enter the Service Mode, PIP Function. 7. Select Item "3 SCL1" (the single insert is displayed) 8. Use Items "2 CSAT" and "1 HUE" to match the color of the sub picture to that of the main picture. 9. Save data and exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Color Bars	
Input Terminal	Video or RF Input	
<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p align="center"><u>SERVICE MODE</u></p> Activate MENU-0-1-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice) </div>		

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[Cb, Cr Circuit]		Purpose: To match the match grays between color and monochrome pictures. Symptom: Grays have a color tint.
13. Cb, Cr Offset		
Measuring Instrument	-----	<ol style="list-style-type: none"> 1. Supply an NTSC White Raster with 25% luminance. 2. Activate the Service Mode, VCJ Function. 3. Set the data for item "30 COLH" to 63. 4. Adjust items "23 CBOF" and "24 CROF" for optimum gray. 5. Set the data for item "30 COLH" back to 31. 6. Save the data and exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	White Raster @ 25%	
Input Terminal	NTSC Input	
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p align="center">SERVICE MODE</p> <p>Activate MENU-0-1-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)</p> </div>		

[On Screen Display Circuit]		Purpose: To position the on-screen display. Symptom: On-screen display is not positioned correctly.
14. Character Position		
Measuring Instrument	-----	<ol style="list-style-type: none"> 1. Supply a Monoscope signal to the Video or RF Input. 2. Select the Monoscope as the source for the main picture (Input button). 3. Activate the Service Mode, HR Function. 4. Use the Adjust Right/Left buttons to center the display horizontally. (A = B) 5. Save data and exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope	
Input Terminal	RF or Video	
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p align="center">SERVICE MODE</p> <p>Activate MENU-0-1-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)</p> </div>		

[Defl/Conv Circuits]	Purpose: To preset data values controlling raster geometry.
15. Geometry Preset	Symptom: Raster Distortion

Measuring Instrument	-----
Test Point	-----
Ext. Trigger	-----
Measuring Range	-----
Input Signal	NTSC RF or Video
Input Terminal	Video or RF Input

Note: This procedure is usually only necessary if:
 • An E2PROM is replaced in the Control or Convergence circuits.
 • E2RESET or Convergence Reset has been activated.

Deflection Circuit

1. Supply NTSC Video signal to the Video or RF Input.
2. Select the NTSC signal as the source (Input button).
3. Enter the Service Mode, VCJ Function.
4. Insure all data values correspond to those in the VCJ Table shown in *Table 1*.
5. Save the data and exit the Service Mode.

CONVERGENCE MODE	
Activate	MENU-0-1-5-9
Misc.	"6"
Coarse.....	"5"
Fine	"4"
Color (R,G B or DF)...	AUDIO
Item No.....	VIDEO
Adjust/Move.....	ADJUST
Cursor Toggle.....	ENTER
Save & Exit.....	MENU (twice)

SERVICE MODE	
Activate	MENU-0-1-5-7
Function	AUDIO
Item No.	VIDEO
Adjust Data	ADJUST
Save Data	ENTER
Exit	MENU (twice)

Convergence Circuit

1. Enter the Convergence Coarse Mode.
2. Set the data in Red, Green and Blue Coarse Convergence Functions to the data values given in *Tables 2, 3 and 4*.
3. Exit the Convergence Mode.

VCJ Function

Item	Abbr.	Data
2	VHGT	31
3	SCOR	7
4	VLIN	7
51	VPOS	31
55	HPOS	34

Table 1

CONV GREEN

Item	Abbr.	Data
1	HSTA*	0
2	VSTA*	0
3	SKEW	0
4	TILT	0
5	HWID	30
6	HLIN	0
7	SPCC	-125
8	HKEY	30
9	TBPC	-230
10	VKEY	-10
11	VWID	0
12	VLIN	0

* Data should not exceed ±100

Table 2

CONV RED

Item	Abbr.	Data
1	HSTA*	100
2	VSTA*	0
3	SKEW	0
4	TILT	0
5	HLIN	-270
6	HWID	-60
7	VKEY	-170
8	VWID	0
9	VLIN	0
10	TPBC	0
11	SDBW	80

* Data should not exceed ±100

Table 3

CONV BLUE

Item	Abbr.	Data
1	HSTA*	-100
2	VSTA*	0
3	SKEW	0
4	TILT	0
5	HLIN	280
6	HWID	-50
7	VKEY	150
8	VWID	0
9	VLIN	0
10	TPBC	0
11	SDBW	-70

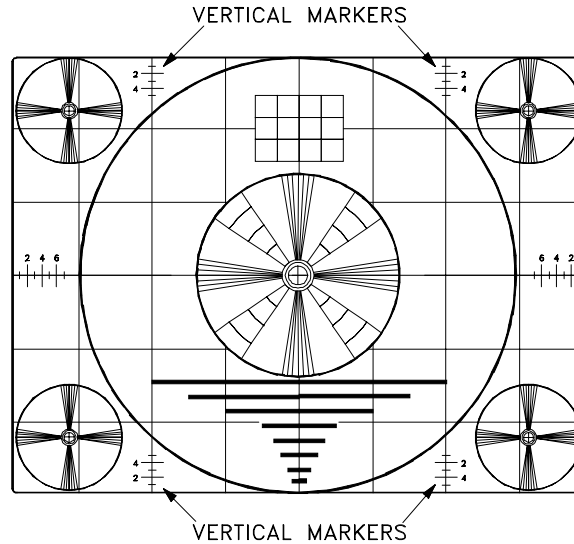
* Data should not exceed ±100

Table 4

[Deflection Circuit]	
16. Height and Vert. Linearity	
Measuring Instrument	-----
Test Point	-----
Ext. Trigger	-----
Measuring Range	-----
Input Signal	Monoscope
Input Terminal	Video or RF Input

Purpose: To set the vertical height and linearity.
Symptom: Incorrect height and/or vertical non-linearity.

1. Supply a Monoscope signal to the Video or RF Input.
2. Activate the Service Mode, VCJ Function.
3. Adjust Item "2 VHT" so the sum of the vertical markers is 4.
4. Adjust Item "4 VLR" so the large Monoscope circle is round.
5. Save the data and exit the Service Mode.



SERVICE MODE
 Activate MENU-0-1-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

[Convergence Circuit]	
17. Static Convergence	
Measuring Instrument	-----
Test Point	-----
Ext. Trigger	-----
Measuring Range	-----
Input Signal	Monoscope/Crosshatch
Input Terminal	Video or RF Input

Purpose: Converge red, green and blue at the screen center.
Symptom: Color edging over most of the picture.

Note: If not correct, preset Vertical Linearity, Service Mode, VCJ Function, Item "4 VLIN".

Preliminary:

Degauss the shield cover and bracket unit of the CRT assembly and chassis sheet metal. **Do Not** degauss the CPM Assemblies.

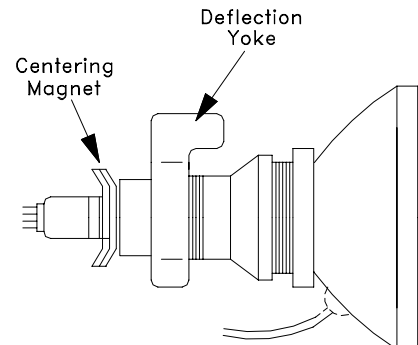
Centering and Static Convergence

1. Supply a Monoscope signal to the Video or RF Input.
2. Enter the Coarse Convergence Mode
3. Press "2" (green Monoscope is displayed)
3. Press "7" (removes HSTA and VSTA drive from the Convergence circuit).
4. Use the Green Centering Magnet to center the green monoscope on the screen.
6. Rotate the Green Yoke to correct any tilt.
7. Exit the Convergence Mode.

Note: If the green raster centering shifts when exiting the Convergence Mode, use Coarse Green Items "1 HSTA" and "2 VSTA" to correct centering.

8. Supply an External Crosshatch Pattern
9. Use the Red Centering Magnet to converge the red crosshatch on the green at the center of the screen, and remove any red tilt by rotating the Red Yoke.

10. Repeat Step 9 for the blue crosshatch, using the Blue Centering Magnet and Blue Yoke.



CONVERGENCE MODE
 ActivateMENU-0-1-5-9
 Misc."6"
 Coarse....."5"
 Fine "4"
 Color (R,G B or DF)...AUDIO
 Item No.....VIDEO
 Adjust/Move.....ADJUST
 Cursor Toggle.....ENTER
 Save & Exit.....MENU (twice)

[Convergence Circuit]		Purpose: To set the Convergence circuit geometry adjustments.
18. Geometry Adjustment		Symptom: Raster distortion at the top, bottom or sides of the picture.
Measuring Instrument	-----	Note: <i>Vertical Height and Vertical Linearity Adjustments must be performed before this adjustment.</i> Coarse Adjustment 1. Supply a Monoscope signal to the RF or Video Input. 2. Select the Monoscope as the signal source (Input button). 3. Activate the Convergence Mode, Coarse Green Function 4. Adjust Item "5 HWID" so the sum of the horizontal markers is 7.6. 5. Set the data of the following items for straight crosshatch lines. <ul style="list-style-type: none"> • "3 SKEW" ... Skew • "4 TILT" ... Tilt • "6 HLIN" ... Horizontal Linearity • "7 SPCC" ... Side Pin Cushion Correction • "8 HKEY" ... Horizontal Keystone • "9 TBPC" ... Top/Bottom Pin Cushion • "10 VKEY" ... Vertical Keystone • "11 VWID" ... Height • "12 VLIN" ... Vertical Linearity. Note: If the raster centering changes during the adjustments, correct the centering using Items "1 HSTA" and "2 VSTA".
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope	
Input Terminal	RF or Video	

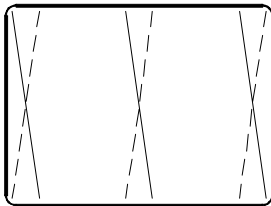
CONVERGENCE MODE
 ActivateMENU-0-1-5-9
 Misc."6"
 Coarse....."5"
 Fine "4"
 Color (R,G B or DF)...AUDIO
 Item No.....VIDEO
 Adjust/Move.....ADJUST
 Cursor Toggle.....ENTER
 Save & Exit.....MENU (twice)

Fine Adjustment

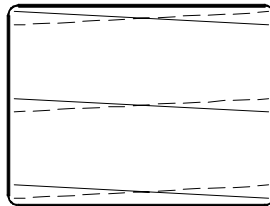
6. Activate the Fine Green Convergence Mode. (Press 4)
7. Use the Cursor to adjust for straight crosshatch lines.
8. Exit the Convergence Mode.

COARSE GREEN ADJUSTMENTS

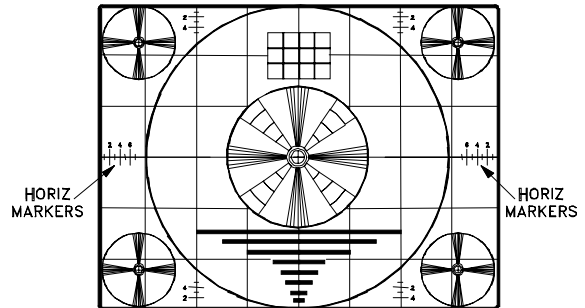
3 SKEW



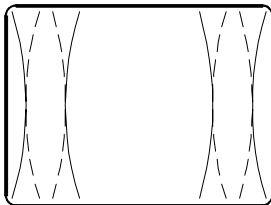
4 TILT



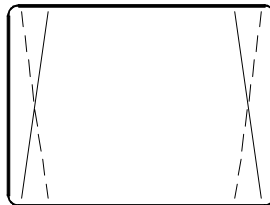
5 HWID



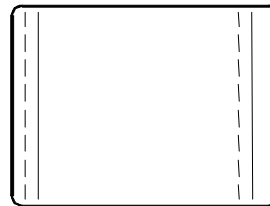
7 SPCC



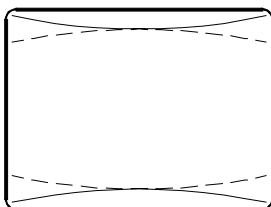
8 HKEY



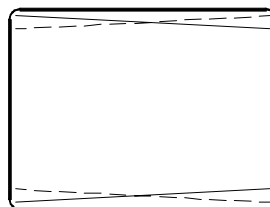
6 HLIN



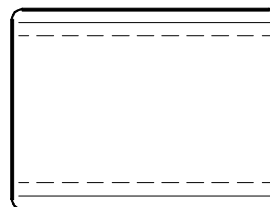
9 TBPC



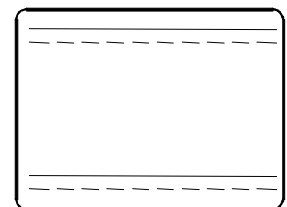
10 VKEY



11 VWID



12 VLIN



[Convergence Circuit]		Purpose: To Converge red and blue on green.
19: Coarse Convergence		Symptom: Color edging at the top, bottom and sides of the picture.

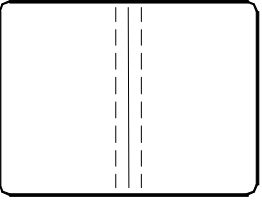
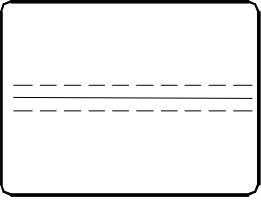
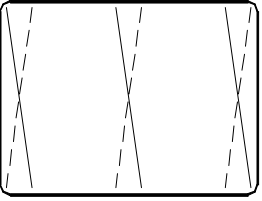
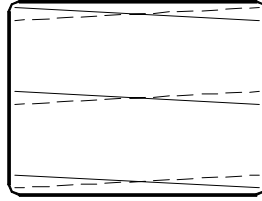
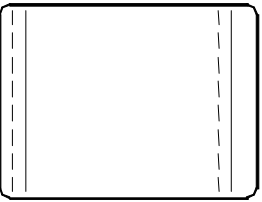

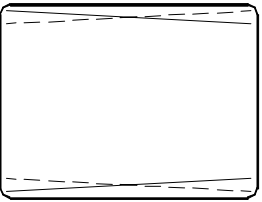
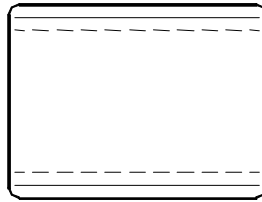
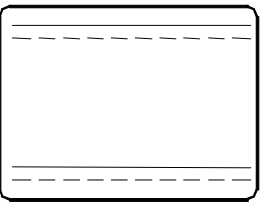
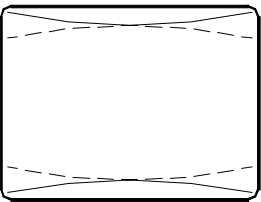
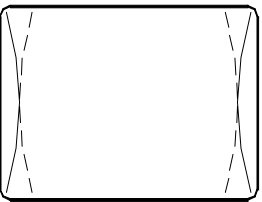
Measuring Instrument	-----
Test Point	-----
Ext. Trigger	-----
Measuring Range	-----
Input Signal	None
Input Terminal	Video Input

1. Select an External Input (no signal)
 2. Enter the Convergence Mode.
 3. Select the Coarse Red Function.
 4. Set the Adjustments shown below to converge red on the green.
 5. Select the Coarse Blue Function
 6. Set the Adjustments shown below to converge blue on the green.
 7. Exit the Convergence Mode
- Note:** If Static Convergence shifts, use HSTA and VSTA to correct convergence at the center of the screen. (HSTA and VSTA data values must not exceed 200)

CONVERGENCE MODE

ActivateMENU-0-1-5-9
 Misc."6"
 Coarse....."5"
 Fine "4"
 Color (R,G B or DF)...AUDIO
 Item No.....VIDEO
 Adjust/Move.....ADJUST
 Cursor Toggle.....ENTER
 Save & Exit.....MENU (twice)

COARSE CONVERGENCE RED & BLUE ADJUSTMENTS

<p>1 HSTA*</p> 	<p>2 VSTA*</p> 	<p>3 SKEW</p> 	<p>4 TILT</p> 
<p>5 HLIN</p> 	<p>6 HWD</p> 	<p>7 VKEY</p> 	<p>8 VWID</p> 
<p>9 VLIN</p> 	<p>10 TBPC</p> 	<p>11 SDBW</p> 	

* Data should not exceed ±100

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[Convergence Circuit]		Purpose: To Converge red and blue on green.																			
20. Fine Convergence		Symptom: Color edging at the top, bottom and sides of the picture.																			
Measuring Instrument	-----	<ol style="list-style-type: none"> 1. Select an External Input (no signal). 2. Enter the Fine Convergence Mode. 3. Select the Fine Red Function. 4. Use the Cursor to converge red on the green. 5. Select the Fine Blue Function. 6. Use the Cursor to converge blue on the green. 7. Exit the Convergence Mode. 																			
Test Point	-----																				
Ext. Trigger	-----																				
Measuring Range	-----																				
Input Signal	None																				
Input Terminal	Video Input																				
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="2" style="text-align: center;">CONVERGENCE MODE</td> </tr> <tr> <td>Activate</td> <td>MENU-0-1-5-9</td> </tr> <tr> <td>Misc.</td> <td>"6"</td> </tr> <tr> <td>Coarse.....</td> <td>"5"</td> </tr> <tr> <td>Fine</td> <td>"4"</td> </tr> <tr> <td>Color (R,G B or DF)...</td> <td>AUDIO</td> </tr> <tr> <td>Item No.....</td> <td>VIDEO</td> </tr> <tr> <td>Adjust/Move.....</td> <td>ADJUST</td> </tr> <tr> <td>Cursor Toggle.....</td> <td>ENTER</td> </tr> <tr> <td>Save & Exit.....</td> <td>MENU (twice)</td> </tr> </table>			CONVERGENCE MODE		Activate	MENU-0-1-5-9	Misc.	"6"	Coarse.....	"5"	Fine	"4"	Color (R,G B or DF)...	AUDIO	Item No.....	VIDEO	Adjust/Move.....	ADJUST	Cursor Toggle.....	ENTER	Save & Exit.....
CONVERGENCE MODE																					
Activate	MENU-0-1-5-9																				
Misc.	"6"																				
Coarse.....	"5"																				
Fine	"4"																				
Color (R,G B or DF)...	AUDIO																				
Item No.....	VIDEO																				
Adjust/Move.....	ADJUST																				
Cursor Toggle.....	ENTER																				
Save & Exit.....	MENU (twice)																				

CHIP PARTS REPLACEMENT

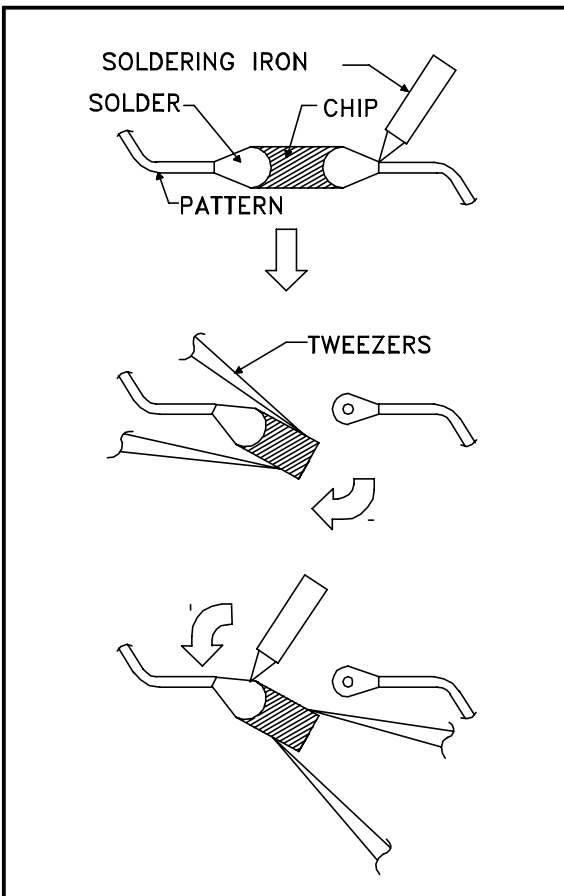
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

Cautions:

1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required.

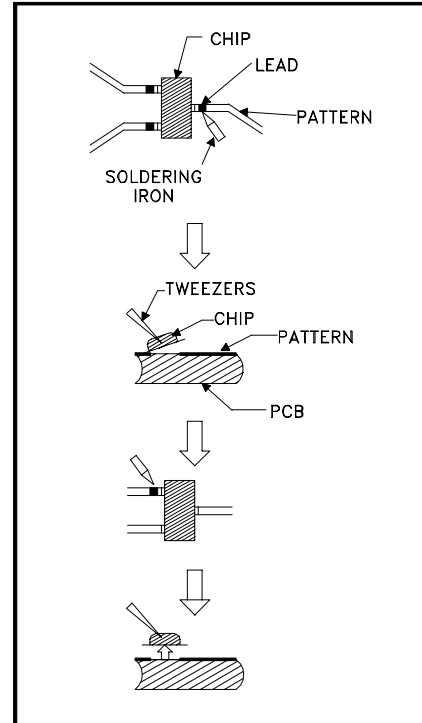
Chip Parts Removal (Resistors, Capacitors, etc.)

1. Grasp the part with tweezers. Melt the solder at both sides alternately, and remove one side of the part with a twisting motion.
2. Melt the solder at the other side and remove the part.



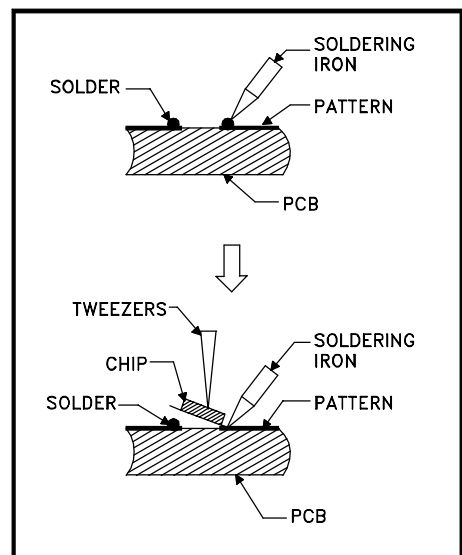
Chip Parts Removal (Transistors)

1. Melt the solder of one lead and lift the side of that lead upward.
2. Simultaneously melt the solder of the other two leads and lift the part from the PCB.



Replacement

1. Presolder the contact points on the circuit pattern.
2. Press the part downward with tweezers and apply the soldering iron as shown.



REPLACEMENT PARTS

Parts Ordering

To expedite delivery of replacement parts orders, specify the following:

1. Model Number/Serial Number
2. Part Number and description
3. Quantity

Note: Unless complete information is supplied, delay in processing of orders will result.

Critical and Warranty Parts Designation

Critical Electrical Components are indicated by **Bold Type** in the Parts List, and in the schematic diagrams by shading.

Warranty Return Parts are indicated in the Parts List with an (*).

Parts Tolerance Codes

Refer to the following chart for tolerance characteristics of electrical components.

MARK	B	C	D	F	G	J	K
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

MARK	M	N	V	X	Z	P	Q
Tolerance %	± 20	± 30	± 10	+ 40 -20	+ 80 -20	+ 100 - 0	+ 30 -10

MARK	M	N	V	X	Z
Tolerance (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

Model Abbreviations

45609	VS-45609
50609	VS-50609
55609	VS-55609
60609	VS-60609
60719	VS-60719
70709	VS-70709

QUICK REFERENCE FOR COMMON REPLACEMENT PARTS

CRT ASSEMBLIES

MODEL	ASSY-CRT-RED	ASSY-CRT-GREEN	ASSY-CRT-BLUE
VS-45609	251C210010	251C210020	251C210030
VS-50609	251C210040	251C210050	251C210060
VS-55609	251C210070	251C210080	251C210090
VS-60609	251C211010	251C211020	251C211030
VS-60719	251C211040	251C211050	251C211060
VS-70709	251C211070	251C211080	251C211090

REMOTE CONTROL

290P103030	REMOTE CONTROL	45609 / 50609 / 55609 / 60609
290P103040	REMOTE CONTROL	60719 / 70709

HIGH VOLTAGE / DEFLECTION COMPONENTS

Q5A02	261P120010	HV-OUT TRANSISTOR	2SC5689
T551	334P278030	TRANS-FLYBACK	
	920P016010	HV-BLOCK	
	129P059050	VR-FOCUS	
	330P284010	DEFL-YOKE	
	453B035010	CAP-ANODE (Red)	
	453B035020	CAP-ANODE (Green & Blue)	

MISCELLANEOUS

MODEL	MIRROR	LENTICULAR SCREEN	FRESNEL LENS
VS-45609	767D055010	491P075010	491P076010
VS-50609	767D055020	491P099010	491P100010
VS-55609	767D055030	491P101010	491P102010
VS-60609	767D048050	491P109010	491P110010
VS-60719	767D048050	491P109010	491P110010
VS-70709	767D048080	491P107020	491P108020

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719. (6) VS-70709

Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
TUBES							
*	251C210010	ASSY-CRT-RED	1	IC952	267P126010	HIC - SE130N	
*	251C210020	ASSY-CRT-GREEN	1	IC9A01	270P472060	IC - NJM7805FA	
*	251C210030	ASSY-CRT-BLUE	1	TRANSISTORS			
*	251C210040	ASSY-CRT-RED	2	TR-CHIP Type (Listed by Generic Number)			
*	251C210050	ASSY-CRT-GREEN	2	Type	Part No.	Description	
*	251C210060	ASSY-CRT-BLUE	2	TR-CHIP	260P807030	DTC124EKAT146	
*	251C210070	ASSY-CRT-RED	3	TR-CHIP	260P817030	2SA1037K-S	
*	251C210080	ASSY-CRT-GREEN	3	TR-CHIP	260P818030	2SC2412K-S	
*	251C210090	ASSY-CRT-BLUE	3	TR-CHIP	261P810010	2SK664	
*	251C211010	ASSY-CRT-RED	4	Conventional Transistors (By Ref#)			
*	251C211020	ASSY-CRT-GREEN	4	Ref#	Part No.	Description	[#]
*	251C211030	ASSY-CRT-BLUE	4	Q401	260P559030	TR - 2SC1740S-S	
*	251C211040	ASSY-CRT-RED	5	Q501	260P420010	TR - 2SC2073-B,C	
*	251C211050	ASSY-CRT-GREEN	5	Q502	260P559030	TR - 2SC1740S-S	
*	251C211060	ASSY-CRT-BLUE	5	Q521	260P559030	TR - 2SC1740S-S	
*	251C211070	ASSY-CRT-RED	6	Q522	260P559030	TR - 2SC1740S-S	
*	251C211080	ASSY-CRT-GREEN	6	Q523	260P560040	TR - 2SA933S-S	
*	251C211090	ASSY-CRT-BLUE	6	Q524	260P559030	TR - 2SC1740S-S	
INTEGRATED CIRCUITS							
IC2C01	275P496010	IC-C-MOS - UPD64082GF-3BA		Q530	260P560040	TR - 2SA933S-S	
IC2C02	275P531010	IC-C-MOS - MSM54V16258B-45TS-K		Q531	260P422010	TR - 2SC2482	
IC2E00	272P951010	IC - BA7046F		Q532	260P422010	TR - 2SC2482	
IC2K01	270P623010	IC - CXA2069Q		Q533	260P559030	TR - 2SC1740S-S	
IC2P20	267P131010	HIC - SI-3033C		Q5A00	261P120010	TR - 2SC5689	
IC2P30	270P210010	IC - NJM7809FA/AN7809F		Q5A02	261P120010	TR - 2SC5689	
IC2V00	270P851010	IC - CXA2142BS		Q5K00	260P664030	TR - 2SC4636	
IC2V40	274P378010	IC-C-MOS - TC74HC4053AF		Q5K02	260P559050	TR - 2SC1740S-E	
IC2Y00	270P852010	IC - TDA9178TD		Q5K03	260P560040	TR - 2SA933S-S	
IC2Y70	272P773010	IC - SN74LS221NS		Q600	260P560040	TR - 2SA933S-S	
IC301	270P750010	IC - LA4663		Q6B00	260P385020	TR - 2SC2229-Y	
IC3A01	270P467010	IC - TDA9855		Q6B01	261P004010	TR - 2SC3271F-N,P	
IC451	270P064030	IC - LA7845N		Q6B02	260P469030	TR - 2SA1321	
IC501	272P237010	IC - LA6324N		Q6B03	260P307020	TR - 2SC3334	
IC502	266P154010	IC - UPC393C		Q6G00	260P385020	TR - 2SC2229-Y	
IC503	270P704010	IC - LM4040BIZ-10.0		Q6G01	261P004010	TR - 2SC3271F-N,P	
IC6P00	275P593010	IC-C-MOS - SDA9589X		Q6G02	260P469030	TR - 2SA1321	
IC6Y50	272P302010	IC - PA0030		Q6G03	260P307020	TR - 2SC3334	
IC6Y51	270P650010	IC - MM1031XM		Q6R00	260P385020	TR - 2SC2229-Y	
IC700	275P363040	IC-C-MOS - M306V0EEFF		Q6R01	261P004010	TR - 2SC3271F-N,P	
IC701	275P222020	IC-C-MOS - M24C32MN6T		Q6R02	260P469030	TR - 2SA1321	
IC702	266P130060	IC - PST993E		Q6R03	260P307020	TR - 2SC3334	
IC703	274P378010	IC-C-MOS - TC74HC4053AF		Q7A91	261P114010	TR - 2SA1585STPR	5&6
IC704	275P656010	IC-C-MOS - TC7W02FU		Q7K21	260P559030	TR - 2SC1740S-S	5&6
IC7K21	270P831010	IC-C-MOS - OPA2350PA	5&6	Q971	260P559030	TR - 2SC1740S-S	
IC800	275P595010	IC-C-MOS - CM0022AF		Q972	260C676040	TR - 2SC3311A-R,S	
IC801	275P222020	IC-C-MOS - M24C32MN6T		Q973	260P559030	TR - 2SC1740S-S	
IC802	270P751010	IC - TL084CD		Q975	260P560040	TR - 2SA933S-S	
IC803	270P751010	IC - TL084CD		Q979	260P416030	TR - 2SC2274-F,K-F	
IC804	270P751010	IC - TL084CD		Q980	260P559030	TR - 2SC1740S-S	
IC805	270P817010	IC - L4931CDT33-TR		DIODES			
IC8C00	267P155010	HIC - STK393-110		D2J11	264P485060	DIODE - RD7.5FB2	
IC8E01	263P408020	IC-C-MOS - UPD6376GS		D2J12	264P485060	DIODE - RD7.5FB2	
IC8E02	263P408020	IC-C-MOS - UPD6376GS		D2J21	264P485060	DIODE - RD7.5FB2	
IC8E03	263P408020	IC-C-MOS - UPD6376GS		D2J22	264P485060	DIODE - RD7.5FB2	
IC935	270P472060	IC - NJM7805FA		D2K19	264P485060	DIODE - RD7.5FB2	
IC936	270P210010	IC - NJM7809FA/AN7809F		D2K21	264P485060	DIODE - RD7.5FB2	
IC951	267P140020	HIC - STR-F6628		D2K23	264P485060	DIODE - RD7.5FB2	

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719, (6) VS-70709

Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
D2V00	264P425010	DIODE - 1SS88		D958	264P469050	DIODE - EQA02-25C/RD27EB3	
D2V01	264P486080	DIODE - RD10FB1		D970	264P722010	DIODE - SF64	
D2W00	264P828010	D-CHIP - DAN202U/MA142WK		D971	264P588010	DIODE - FML-G16S	
D2W01	264P828010	D-CHIP - DAN202U/MA142WK		D972	264P722010	DIODE - SF64	
D2W02	264P828010	D-CHIP - DAN202U/MA142WK		D973	264P045040	DIODE - 1S24710M	
D2W03	264P828010	D-CHIP - DAN202U/MA142WK		D974	264P566010	DIODE - FMP-G12S	
D2W04	264P828010	D-CHIP - DAN202U/MA142WK		D975	264P045040	DIODE - 1S24710M	
D451	264D056020	DIODE - S5500D/EM1Z/ERB12-02RK		D976	264P484060	DIODE - RD6.2FB1	
D452	264D056020	DIODE - S5500D/EM1Z/ERB12-02RK		D978	264P045040	DIODE - 1S24710M	
D453	264D056020	DIODE - S5500D/EM1Z/ERB12-02RK		D979	264P045040	DIODE - 1S24710M	
D454	264P483070	DIODE - RD5.1FB1		D980	264P045040	DIODE - 1S24710M	
D455	264P045040	DIODE - 1S24710M		D981	264D056020	DIODE - S5500D/EM1Z/ERB12-02RK	
D456	264P483070	DIODE - RD5.1FB1		D982	264P045040	DIODE - 1S24710M	
D457	264P045040	DIODE - 1S24710M		D983	264P573020	DIODE - EG1A	
D511	264P045040	DIODE - 1S24710M		D984	264P045040	DIODE - 1S24710M	
D520	264P358070	DIODE - RU 4AM		D9A01	264D056020	DIODE - S5500D/EM1Z/ERB12-02RK	
D521	264P102020	DIODE - RU3B					
D522	264P358070	DIODE - RU 4AM				COILS	
D523	264P492020	DIODE - RD33FB1		L1A05	325C241030	COIL-CHIP - 10MH-K	
D524	264P488030	DIODE - RD13FB2		L1A07	325C241030	COIL-CHIP - 10MH-K	
D525	264P045040	DIODE - 1S24710M		L1A13	325C241030	COIL-CHIP - 10MH-K	
D530	264P045040	DIODE - 1S24710M		L1B06	325C241030	COIL-CHIP - 10MH-K	
D542	264P045040	DIODE - 1S24710M		L1B07	325C241030	COIL-CHIP - 10MH-K	
D543	264P045040	DIODE - 1S24710M		L1B13	325C241030	COIL-CHIP - 10MH-K	
D544	264P485060	DIODE - RD7.5FB2		L1R01	325C241030	COIL-CHIP - 10MH-K	
D557	264P295020	DIODE - ES1C		L2A01	321C114010	COIL-RF - 2200MH-J	
D571	264P045040	DIODE - 1S24710M		L2B01	321C114010	COIL-RF - 2200MH-J	
D580	264P045040	DIODE - 1S24710M		L2C01	325C146050	COIL-CHIP - 15MH-J	
D5A1	264P489070	DIODE - RD18FB3		L2C03	409P777080	EMI-F-CHIP - BLM21P221S	
D5K01	264P528030	DIODE - RP1H		L2C05	409P777080	EMI-F-CHIP - BLM21P221S	
D5K03	264P724010	DIODE - STF14		L2C06	409P777080	EMI-F-CHIP - BLM21P221S	
D5K10	264P528030	DIODE - RP1H		L2D01	325C241030	COIL-CHIP - 10MH-K	
D600	264P457080	DIODE - RD3.3EB1		L2D03	325C241030	COIL-CHIP - 10MH-K	
D6B01	264P501050	DIODE - HZ3BLL		L2D20	325C241030	COIL-CHIP - 10MH-K	
D6B02	264P501040	DIODE - HZ3ALL		L2D30	325C241030	COIL-CHIP - 10MH-K	
D6B03	264P045040	DIODE - 1S24710M		L2E00	325C241030	COIL-CHIP - 10MH-K	
D6B04	264P045040	DIODE - 1S24710M		L2K42	409P864010	EMI-F-CHIP - ACB2012M600/BLM21A601S	
D6G03	264P045040	DIODE - 1S24710M		L2V00	325C241030	COIL-CHIP - 10MH-K	
D6G04	264P045040	DIODE - 1S24710M		L2V01	325C241030	COIL-CHIP - 10MH-K	
D6R03	264P045040	DIODE - 1S24710M		L2V03	409P864010	EMI-F-CHIP - ACB2012M600/BLM21A601S	
D6R04	264P045040	DIODE - 1S24710M		L2V40	325C241030	COIL-CHIP - 10MH-K	
D746	264P484040	DIODE - RD5.6FB3		L2V50	325C241030	COIL-CHIP - 10MH-K	
D747	264P484040	DIODE - RD5.6FB3		L2Y20	325C241030	COIL-CHIP - 10MH-K	
D794	264P484040	DIODE - RD5.6FB3		L2Y30	325C241030	COIL-CHIP - 10MH-K	
D795	264P484040	DIODE - RD5.6FB3		L2Y70	325C241030	COIL-CHIP - 10MH-K	
D797	264P484040	DIODE - RD5.6FB3		L452	321C130010	COIL-RF - 2MH	
D7A00	264P212020	D-LED - LN31GPH		L511	321C130090	COIL-RF - 10MH-K	
D7G34	264P425010	DIODE - 1SS88		L514	411D009020	CORE-FERRITE	
D7G35	264P425010	DIODE - 1SS88		L516	411P001010	LEAD-FERRITE	
D7K21	268P100010	PHOTO DIODE - SFH235FA	5&6	L517	351P220010	COIL-CHOKE - ZTS6620	
D7K22	264P045040	DIODE - 1S24710M	5&6	L521	411D009020	CORE-FERRITE	
D8C01	264P486060	DIODE - RD9.1FB3		L522	333P049090	COIL-HORIZ-LIN	
D8C02	264P486060	DIODE - RD9.1FB3		L6B00	325C402020	COIL-PEAKING - 56MH-J	
D8D00	264P045040	DIODE - 1S24710M		L6B01	325C402020	COIL-PEAKING - 56MH-J	
D951	264P721010	DIODE - TS6B06G		L6B10	325C461040	COIL-PEAKING - 12MH-K	
D952	264P508040	DIODE - S1WB(A)60		L6G00	325C402020	COIL-PEAKING - 56MH-J	
D953	264P521040	DIODE - EU1A		L6G01	325C402020	COIL-PEAKING - 56MH-J	
D955	264P521040	DIODE - EU1A		L6G10	325C461040	COIL-PEAKING - 12MH-K	
D956	264P527020	DIODE - AK04		L6P00	409P777080	EMI-F-CHIP - BLM21P221S	
D957	264P045040	DIODE - 1S24710M		L6P01	325C241030	COIL-CHIP - 10MH-K	

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719. (6) VS-70709

Ref #	Part #	Part Name & Description	[#]
L6P02	325C241030	COIL-CHIP - 10MH-K	
L6P03	409P777080	EMI-F-CHIP - BLM21P221S	
L6R00	325C402020	COIL-PEAKING - 56MH-J	
L6R01	325C402020	COIL-PEAKING - 56MH-J	
L6R10	325C461040	COIL-PEAKING - 12MH-K	
L6Y10	321C114010	COIL-RF - 2200MH-J	
L6Y50	325C121030	COIL-PEAKING - 10MH-K	
L6Y51	325C167040	COIL-PEAKING - 82MH-J	
L717	325C146000	COIL-CHIP - 5.6MH-J	
L77A1	325C121030	COIL-PEAKING - 10MH-K	
L7A19	325C241030	COIL-CHIP - 10MH-K	
L7A62	325C241030	COIL-CHIP - 10MH-K	
L7A99	325C241030	COIL-CHIP - 10MH-K	
L8D01	325C241030	COIL-CHIP - 10MH-K	
L8D02	325C241030	COIL-CHIP - 10MH-K	
L8D03	325C241030	COIL-CHIP - 10MH-K	
L8D04	325C241030	COIL-CHIP - 10MH-K	
L8E01	325C241030	COIL-CHIP - 10MH-K	
L8E02	325C241030	COIL-CHIP - 10MH-K	
L901	351P218010	LINE-FILTER - ELF24V030A	
L902	351P219010	LINE-FILTER - ELF15N030A	
L960	321C141010	COIL-RF - 6.8MH-M	
L961	321C141010	COIL-RF - 6.8MH-M	
L963	411D009020	CORE-FERRITE	
L964	411D009020	CORE-FERRITE	
L965	411D009020	CORE-FERRITE	
L971	321C141010	COIL-RF - 6.8MH-M	
L972	321C141010	COIL-RF - 6.8MH-M	
L973	321C130050	COIL-RF - 4.7MH-K	
L974	411D009020	CORE-FERRITE	
L980	411P012010	BEAD-FERRITE	
L981	321C141010	COIL-RF - 6.8MH-M	
L982	411P001010	LEAD-FERRITE	
TRANSFORMERS			
T501	349P122080	TRANS-SIDE-PCC	
T519	349P219010	TRANS-HORIZ	
T531	336P043010	TRANS-HORIZ-DRIVE	
T532	336P043010	TRANS-HORIZ-DRIVE	
T551	334P278030	TRANS-FLYBACK	
T951	350P787010	TRANS-POWER	
T952	350P779010	TRANS-POWER	
VARIABLE RESISTORS			
	129P059050	VR-FOCUS - MHF116-50W	
RV901	265P100010	VARISTOR - ERZV10D271/ERZVEAV271	
RESISTORS			
R-M-CHIP Type Resistors (Listed by Value)			
Value	Part No.	Value	Part No.
1/10W 0OHM	103P409050	1/10W 1.3K-F	103P472080
1/16W 0OHM	103P509050	1/10W 1.5K-F	103P472090
1/10W 10-J	103P400010	1/10W 1.5K-J	103P402070
1/16W 10-J	103P500010	1/16W 1.5K-J	103P502070
1/10W 22-J	103P400050	1/10W 1.8K-J	103P402080
1/10W 33-J	103P400070	1/10W 2.2K-J	103P402090
1/10W 39-J	103P400080	1/16W 2.2K-J	103P502090
1/16W 39-J	103P500080	1/10W 2.4K-F	103P473040
1/10W 47-J	103P400090	1/10W 2.7K-J	103P403000

Ref #	Part #	Part Name & Description	[#]	
	<u>Value</u>	<u>Part No.</u>	<u>Value</u>	<u>Part No.</u>
	1/10W 56-J	103P401000	1/10W 3.3K-J	103P403010
	1/16W 68-J	103P501010	1/10W 3.9K-J	103P403020
	1/10W 75-J	103P409090	1/10W 4.3K-F	103P474000
	1/10W 82-J	103P401020	1/10W 4.7K-F	103P474010
	1/16W 100-J	103P501030	1/10W 4.7K-J	103P403030
	1/10W 100-J	103P401030	1/10W 5.6K-F	103P474030
	1/10W 120-J	103P401040	1/10W 5.6K-J	103P403040
	1/10W 160-F	103P470060	1/10W 6.8K-J	103P403050
	1/10W 180-F	103P470070	1/10W 8.2K-F	103P474070
	1/16W 180-J	103P501060	1/10W 8.2K-J	103P403060
	1/10W 200-F	103P470080	1/10W 10K-F	103P474090
	1/10W 220-F	103P470090	1/10W 10K-J	103P403070
	1/10W 220-J	103P401070	1/10W 12K-J	103P403080
	1/16W 220-J	103P501070	1/16W 12K-J	103P503080
	1/10W 240-F	103P471000	1/10W 15K-F	103P475030
	1/10W 330-F	103P471030	1/10W 15K-J	103P403090
	1/10W 330-J	103P401090	1/16W 15K-F	103P495030
	1/10W 360-F	103P471040	1/16W 15K-J	103P503090
	1/10W 390-F	103P471050	1/10W 18K-J	103P404000
	1/10W 390-J	103P402000	1/16W 18K-J	103P504000
	1/10W 470-F	103P471070	1/16W 22K-F	103P495070
	1/10W 470-J	103P402010	1/16W 20K-F	103P495060
	1/16W 510-F	103P491080	1/10W 22K-J	103P404010
	1/10W 560-F	103P471090	1/10W 27K-J	103P404020
	1/16W 560-F	103P491090	1/10W 33K-J	103P404030
	1/16W 560-J	103P502020	1/16W 33K-J	103P504030
	1/10W 620-F	103P472000	1/10W 39K-J	103P404040
	1/10W 680-F	103P472010	1/10W 47K-J	103P404050
	1/16W 680-J	103P502030	1/10W 56K-J	103P404060
	1/10W 820-F	103P472030	1/10W 68K-J	103P404070
	1/10W 820-J	103P402040	1/10W 82K-F	103P477010
	1/10W 910-F	103P472040	1/10W 100K-J	103P404090
	1/10W 1K-F	103P472050	1/10W 120K-J	103P405000
	1/10W 1K-J	103P402050	1/10W 220K-J	103P405030
	1/16W 1K-J	103P502050	1/10W 470K-J	103P405070
	1/10W 1.2K-J	103P402060	1/10W 560K-J	103P405080
			1/10W 1M-J	103P406010
Conventional Resistors (By Ref #)				
Ref	Part No.	Description	[#]	
R2J01	103P715000	R-CARBON - 1/4W 120K-J		
R2J02	103P715000	R-CARBON - 1/4W 120K-J		
R2J11	103P715000	R-CARBON - 1/4W 120K-J		
R2J13	103P715000	R-CARBON - 1/4W 120K-J		
R2J21	103P715000	R-CARBON - 1/4W 120K-J		
R2J23	103P715000	R-CARBON - 1/4W 120K-J		
R2J44	103P715000	R-CARBON - 1/4W 120K-J		
R2J45	103P715000	R-CARBON - 1/4W 120K-J		
R2K70	103P711030	R-CARBON - 1/4W 100-J		
R2K71	103P711080	R-CARBON - 1/4W 270-J		
R401	103P464030	R-METAL - 1/4W 5.6K-F		
R405	103P463040	R-METAL - 1/4W 2.4K-F		
R411	103P712040	R-CARBON - 1/4W 820-J		
R451	103P713030	R-CARBON - 1/4W 4.7K-J		
R453	103P711090	R-CARBON - 1/4W 330-J		
R458	103C188040	R-METAL - 2W 2.2-J		
R459	103C188050	R-METAL - 2W 2.7-J		
R462	103P712090	R-CARBON - 1/4W 2.2K-J		
R463	103P713050	R-CARBON - 1/4W 6.8K-J		

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719. (6) VS-70709

Ref #	Part #	Part Name & Description	[#]
R464	103P713000	R-CARBON - 1/4W 2.7K-J	
R465	103P712050	R-CARBON - 1/4W 1K-J	
R466	103P712050	R-CARBON - 1/4W 1K-J	
R467	103P712050	R-CARBON - 1/4W 1K-J	
R502	103P713030	R-CARBON - 1/4W 4.7K-J	
R503	103P713070	R-CARBON - 1/4W 10K-J	
R507	103P711030	R-CARBON - 1/4W 100-J	
R508	103P712050	R-CARBON - 1/4W 1K-J	
R510	103P713030	R-CARBON - 1/4W 4.7K-J	
R512	103P711030	R-CARBON - 1/4W 100-J	
R520	103C187090	R-METAL - 2W 0.82-J	
R521	103P713070	R-CARBON - 1/4W 10K-J	
R522	103C187090	R-METAL - 2W 0.82-J	
R524	103P713090	R-CARBON - 1/4W 15K-J	
R528	103P711010	R-CARBON - 1/4W 68-J	
R529	103P397090	R-FUSE - 1/2W 0.82-J	
R531	103P712010	R-CARBON - 1/4W 470-J	
R532	103P712010	R-CARBON - 1/4W 470-J	
R533	103P712050	R-CARBON - 1/4W 1K-J	
R534	103C393060	R-METAL-P - 3W 8.2K-J	
R535	103C393060	R-METAL-P - 3W 8.2K-J	
R537	103P712050	R-CARBON - 1/4W 1K-J	
R538	103C182020	R-METAL - 2W 560-J	
R540	103P711030	R-CARBON - 1/4W 100-J	
R541	103P713010	R-CARBON - 1/4W 3.3K-J	
R544	103P467070	R-METAL - 1/4W 150K-F	
R545	103P467020	R-METAL - 1/4W 2.4K-F	
R546	103P714060	R-CARBON - 1/4W 56K-J	
R550	103P713070	R-CARBON - 1/4W 10K-J	
R552	103P715090	R-CARBON - 1/4W 680K-J	
R553	103P463040	R-METAL - 1/4W 2.4K-F	
R554	103P712050	R-CARBON - 1/4W 1K-J	
R555	103C390070	R-METAL-P - 3W 33-J	
R556	103P714030	R-CARBON - 1/4W 33K-J	
R557	103P712050	R-CARBON - 1/4W 1K-J	
R558	103C391050	R-METAL-P - 3W 150-J	
R559	103P463050	R-METAL - 1/4W 2.7K-F	
R561	103P464010	R-METAL - 1/4W 4.7K-F	
R563	103P714070	R-CARBON - 1/4W 68K-J	
R564	103P714040	R-CARBON - 1/4W 39K-J	
R565	103P714090	R-CARBON - 1/4W 100K-J	
R566	103C187080	R-METAL - 2W 0.68-J	
R567	103P712050	R-CARBON - 1/4W 1K-J	
R568	103P714010	R-CARBON - 1/4W 22K-J	
R569	103P390010	R-FUSE - 1/2W 10-J	
R570	103P715000	R-CARBON - 1/4W 120K-J	
R571	103P715060	R-CARBON - 1/4W 390K-J	
R572	103P712030	R-CARBON - 1/4W 680-J	
R573	103C390090	R-METAL-P - 3W 47-J	
R574	103P714090	R-CARBON - 1/4W 100K-J	
R576	103P715070	R-CARBON - 1/4W 470K-J	
R577	103P713060	R-CARBON - 1/4W 8.2K-J	
R579	103P438040	R-FUSE-MET - 2W 2.2-K/J	
R580	103P714050	R-CARBON - 1/4W 47K-J	
R581	103P713030	R-CARBON - 1/4W 4.7K-J	
R582	103P712050	R-CARBON - 1/4W 1K-J	
R583	103P713000	R-CARBON - 1/4W 2.7K-J	
R584	103P712090	R-CARBON - 1/4W 2.2K-J	
R587	101P101030	R-COMPOSITION - 1/2W 100-K	
R588	103C171040	R-METAL - 1W 120-J	

Ref #	Part #	Part Name & Description	[#]
R590	103P713090	R-CARBON - 1/4W 15K-J	
R595	103P713070	R-CARBON - 1/4W 10K-J	
R596	103P463080	R-METAL - 1/4W 2.4K-F	
R597	103P460090	R-METAL - 1/4W 220-F	
R599	103P714020	R-CARBON - 1/4W 27K-J	
R5K03	103C174030	R-METAL - 1W 33K-J	
R5K04	103C174030	R-METAL - 1W 33K-J	
R5K05	103C174030	R-METAL - 1W 33K-J	
R5K06	103C174030	R-METAL - 1W 33K-J	
R5K07	103C174030	R-METAL - 1W 33K-J	
R5K08	103C174030	R-METAL - 1W 33K-J	
R5K09	103P392020	R-FUSE - 1/2W 560-J	
R5K10	103P712050	R-CARBON - 1/4W 1K-J	
R5K11	103P711070	R-CARBON - 1/4W 220-J	
R5K12	103P390060	R-FUSE - 1/2W 27-J	
R5K13	103P711090	R-CARBON - 1/4W 330-J	
R5K15	103P712070	R-CARBON - 1/4W 1.5K-J	
R5K16	103P711030	R-CARBON - 1/4W 100-J	
R5K25	103P711030	R-CARBON - 1/4W 100-J	
R5K32	103P715010	R-CARBON - 1/4W 150K-J	
R5K33	103P714050	R-CARBON - 1/4W 47K-J	
R5K34	103P390060	R-FUSE - 1/2W 27-J	
R5K43	103P712050	R-CARBON - 1/4W 1K-J	
R5K46	103P711030	R-CARBON - 1/4W 100-J	
R600	103P714010	R-CARBON - 1/4W 22K-J	
R601	103P714050	R-CARBON - 1/4W 47K-J	
R602	103P711030	R-CARBON - 1/4W 100-J	
R6B01	103P141080	R-CARBON - 1/2W 270-J	
R6B02	103P711020	R-CARBON - 1/4W 82-J	
R6B07	103P712050	R-CARBON - 1/4W 1K-J	
R6B09	103C193030	R-METAL - 3W 4.7K-J	
R6B10	103C193010	R-METAL - 3W 3.3K-J	
R6B11	103P711030	R-CARBON - 1/4W 100-J	
R6B12	103P711030	R-CARBON - 1/4W 100-J	
R6B13	103P711070	R-CARBON - 1/4W 220-J	
R6B16	103P711070	R-CARBON - 1/4W 220-J	
R6B17	103P711030	R-CARBON - 1/4W 100-J	
R6G01	103P141080	R-CARBON - 1/2W 270-J	
R6G02	103P711020	R-CARBON - 1/4W 82-J	
R6G07	103P712050	R-CARBON - 1/4W 1K-J	
R6G09	103C193030	R-METAL - 3W 4.7K-J	
R6G10	103C193010	R-METAL - 3W 3.3K-J	
R6G11	103P711030	R-CARBON - 1/4W 100-J	
R6G12	103P711030	R-CARBON - 1/4W 100-J	
R6G13	103P711070	R-CARBON - 1/4W 220-J	
R6G16	103P711070	R-CARBON - 1/4W 220-J	
R6G17	103P711030	R-CARBON - 1/4W 100-J	
R6R01	103P141080	R-CARBON - 1/2W 270-J	
R6R02	103P711020	R-CARBON - 1/4W 82-J	
R6R07	103P712050	R-CARBON - 1/4W 1K-J	
R6R09	103C193030	R-METAL - 3W 4.7K-J	
R6R10	103C193010	R-METAL - 3W 3.3K-J	
R6R11	103P711030	R-CARBON - 1/4W 100-J	
R6R12	103P711030	R-CARBON - 1/4W 100-J	
R6R13	103P711070	R-CARBON - 1/4W 220-J	
R6R16	103P711070	R-CARBON - 1/4W 220-J	
R6R17	103P711030	R-CARBON - 1/4W 100-J	
R77A0	103P712050	R-CARBON - 1/4W 1K-J	
R77A1	103P713010	R-CARBON - 1/4W 3.3K-J	
R7A97	103C180050	R-METAL - 2W 22-J	

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[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719, (6) VS-70709

Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
C2C32	141P143030	C-CER-CHIP - B16V 0.1M-K		C2P22	181P352040	C-ELEC - 16V 100M-M	
C2C45	141P143030	C-CER-CHIP - B16V 0.1M-K		C2P30	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C2C46	141P143030	C-CER-CHIP - B16V 0.1M-K		C2P40	181P352050	C-ELEC - 16V 220M-M	
C2C50	141P142010	C-CER-CHIP - B50V 0.01M-K		C2V00	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C53	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V01	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C64	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V02	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C81	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V07	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C82	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V09	141P134070	C-CER-CHIP - B16V 1M-K	
C2C85	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V10	141P134070	C-CER-CHIP - B16V 1M-K	
C2C88	141P134070	C-CER-CHIP - B16V 1M-K		C2V11	141P134070	C-CER-CHIP - B16V 1M-K	
C2C89	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V13	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C90	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V15	141P139090	C-CER-CHIP - B16V 0.47M-K	
C2C91	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V16	141P134070	C-CER-CHIP - B16V 1M-K	
C2C92	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V18	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2C94	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V19	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2C95	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V20	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2C96	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V22	141P140090	C-CER-CHIP - B50V 1000P-K	
C2D06	154P343030	C-CER-CHIP - CH50V 82P-J		C2V23	141P134070	C-CER-CHIP - B16V 1M-K	
C2D07	154P343030	C-CER-CHIP - CH50V 82P-J		C2V24	154P341070	C-CER-CHIP - CH50V 18P-J	
C2D09	141P139090	C-CER-CHIP - B16V 0.47M-K		C2V25	154P355020	C-CER-CHIP - SL50V 470P-J	
C2D10	154P343050	C-CER-CHIP - CH50V 100P-J		C2V26	141P139090	C-CER-CHIP - B16V 0.47M-K	
C2D11	154P343050	C-CER-CHIP - CH50V 100P-J		C2V29	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2D12	154P354000	C-CER-CHIP - SL50V 150P-J		C2V30	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2D13	141P143030	C-CER-CHIP - B16V 0.1M-K		C2V40	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2D14	154P355020	C-CER-CHIP - SL50V 470P-J		C2V41	181P352030	C-ELEC - 16V 47M-M	
C2D15	154P343030	C-CER-CHIP - CH50V 82P-J		C2V42	181P352030	C-ELEC - 16V 47M-M	
C2D16	154P343030	C-CER-CHIP - CH50V 82P-J		C2V43	181P352030	C-ELEC - 16V 47M-M	
C2D17	181P352030	C-ELEC - 16V 47M-M		C2V44	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2D18	154P342070	C-CER-CHIP - CH50V 47P-J		C2V50	181P352030	C-ELEC - 16V 47M-M	
C2D19	181P352030	C-ELEC - 16V 47M-M		C2V51	181P352030	C-ELEC - 16V 47M-M	
C2D20	154P333010	C-CER-CHIP - CH50V 68P-J		C2V52	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2D21	154P343030	C-CER-CHIP - CH50V 82P-J		C2V53	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2E00	141P134070	C-CER-CHIP - B16V 1M-K		C2V54	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2E01	141P140090	C-CER-CHIP - B50V 1000P-K		C2Y00	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2E02	181P352030	C-ELEC - 16V 47M-M		C2Y01	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2E03	141P142050	C-CER-CHIP - B25V 0.022M-K		C2Y02	181P352030	C-ELEC - 16V 47M-M	
C2K02	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y03	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2K04	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y20	181P352030	C-ELEC - 16V 47M-M	
C2K09	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y21	141P133010	C-CER-CHIP - B10V 3.3M-M	
C2K11	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y22	141P133010	C-CER-CHIP - B10V 3.3M-M	
C2K12	141P143030	C-CER-CHIP - B16V 0.1M-K		C2Y23	181P352010	C-ELEC - 16V 22M-M	
C2K14	141P144050	C-CER-CHIP - F16V 0.47M-Z		C2Y24	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2K16	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y25	141P133010	C-CER-CHIP - B10V 3.3M-M	
C2K18	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y26	141P133010	C-CER-CHIP - B10V 3.3M-M	
C2K19	141P143030	C-CER-CHIP - B16V 0.1M-K		C2Y30	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2K21	141P144050	C-CER-CHIP - F16V 0.47M-Z		C2Y31	181P352030	C-ELEC - 16V 47M-M	
C2K23	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y40	141P143030	C-CER-CHIP - B16V 0.1M-K	
C2K25	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y60	141P141010	C-CER-CHIP - B50V 1500P-K	
C2K26	141P143030	C-CER-CHIP - B16V 0.1M-K		C2Y61	141P141010	C-CER-CHIP - B50V 1500P-K	
C2K28	141P144050	C-CER-CHIP - F16V 0.47M-Z		C2Y70	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2K29	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y71	181P352030	C-ELEC - 16V 47M-M	
C2K31	141P139090	C-CER-CHIP - B16V 0.47M-K		C2Y72	154P344010	C-CER-CHIP - CH50 180P-J	
C2K41	181P352070	C-ELEC - 16V 470M-M		C2Y73	154P354020	C-CER-CHIP - SL50V 180P-J	
C2K42	141P142010	C-CER-CHIP - B50V 0.01M-K		C2Y74	154P352080	C-CER-CHIP - SL50V 47P-J	
C2K51	141P143030	C-CER-CHIP - B16V 0.1M-K		C2Y80	141P142010	C-CER-CHIP - B50V 0.01M-K	
C2K70	181P352040	C-ELEC - 16V 100M-M		C309	172P262050	C-M-POLY - 50V 0.1M-J	
C2K71	141P142010	C-CER-CHIP - B50V 0.01M-K		C311	172P262050	C-M-POLY - 50V 0.1M-J	
C2K72	181P352060	C-ELEC - 16V 330M-M		C312	172P262050	C-M-POLY - 50V 0.1M-J	
C2P20	141P144050	C-CER-CHIP - F16V 0.47M-Z		C314	172P262050	C-M-POLY - 50V 0.1M-J	
C2P21	141P143030	C-CER-CHIP - B16V 0.1M-K		C321	154P329040	C-CER-CHIP - SL50V 6800P-J	

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[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719. (6) VS-70709

Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
C322	154P329040	C-CER-CHIP - SL50V 6800P-J		C592	172P262050	C-M-POLY - 50V 0.1M-J	
C3A01	154P329030	C-CER-CHIP - SL50V 5600P-J		C595	172P262050	C-M-POLY - 50V 0.1M-J	
C3A02	141P142070	C-CER-CHIP - B25V 0.033M-K		C596	172P417050	C-M-PLA-PP - 200V 1.2M-J	
C3A07	141P139050	C-CER-CHIP - B25V 0.15M-K		C5A2	141P140010	C-CER-CHIP - B50V 220P-K	
C3A08	141P134070	C-CER-CHIP - B16V 1M-K		C5A5	154P328080	C-CER-CHIP - SL50V 2200P-J	
C3A09	141P142000	C-CER-CHIP - B50V 8200P-K		C5A6	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A11	181P352040	C-ELEC - 16V 100M-M		C5A7	154P341010	C-CER-CHIP - CH50V 10P-C	
C3A12	141P134070	C-CER-CHIP - B16V 1M-K		C5A8	181P352040	C-ELEC - 16V 100M-M	
C3A13	141P134070	C-CER-CHIP - B16V 1M-K		C5K00	172P171060	C-M-PLA-PP - 1600V 0.018M-J	
C3A15	181P124020	C-ELEC-NP - 50V 4.7M-M		C5K01	172P171060	C-M-PLA-PP - 1600V 0.018M-J	
C3A18	141P134070	C-CER-CHIP - B16V 1M-K		C601	181P195010	C-ELEC - 350V 1M-M	
C3A19	141P134070	C-CER-CHIP - B16V 1M-K		C6B00	154P355000	C-CER-CHIP - SL50V 390P-J	
C3A21	141P142090	C-CER-CHIP - B25V 0.047M-K		C6B30	154P264000	C-CER - R3.15KV 150P-K	
C3A23	141P143030	C-CER-CHIP - B16V 0.1M-K		C6G00	154P354080	C-CER-CHIP - SL50V 330-J	
C3A27	181P352060	C-ELEC - 16V 330M-M		C6G30	154P264000	C-CER - R3.15KV 150P-K	
C3A28	141P143030	C-CER-CHIP - B16V 0.1M-K		C6P00	181P352030	C-ELEC - 16V 47M-M	
C3A30	181P352040	C-ELEC - 16V 100M-M		C6P01	154P342010	C-CER-CHIP - CH50V 27P-J	
C3A31	141P139090	C-CER-CHIP - B16V 0.47M-K		C6P02	154P342010	C-CER-CHIP - CH50V 27P-J	
C3A33	141P139070	C-CER-CHIP - B16V 0.22M-K		C6P03	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A38	181P124020	C-ELEC-NP - 50V 4.7M-M		C6P04	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A40	141P134070	C-CER-CHIP - B16V 1M-K		C6P06	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A41	141P134070	C-CER-CHIP - B16V 1M-K		C6P07	141P139090	C-CER-CHIP - B16V 0.47M-K	
C3A42	141P142030	C-CER-CHIP - B50V 0.015M-K		C6P08	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A43	141P142030	C-CER-CHIP - B50V 0.015M-K		C6P09	181P350040	C-ELEC - 6.3V 330M-M	
C3A44	141P142000	C-CER-CHIP - B50V 8200P-K		C6P10	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A45	141P134070	C-CER-CHIP - B16V 1M-K		C6P12	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A46	141P139050	C-CER-CHIP - B25V 0.15M-K		C6P14	141P142010	C-CER-CHIP - B50V 0.01M-K	
C3A50	141P142070	C-CER-CHIP - B25V 0.033M-K		C6P15	141P143030	C-CER-CHIP - B16V 0.1M-K	
C3A52	154P329030	C-CER-CHIP - SL50V 5600P-J		C6P16	141P143030	C-CER-CHIP - B16V 0.1M-K	
C3C02	141P139090	C-CER-CHIP - B16V 0.47M-K		C6P17	141P143030	C-CER-CHIP - B16V 0.1M-K	
C3C03	141P139090	C-CER-CHIP - B16V 0.47M-K		C6P20	141P142010	C-CER-CHIP - B50V 0.01M-K	
C411	181P358010	C-ELEC - 35V 2200M-M		C6P30	154P355020	C-CER-CHIP - SL50V 470P-J	
C454	155P110090	C-CER - SL500V 8P-D		C6R00	154P354080	C-CER-CHIP - SL50V 330-J	
C462	172P262010	C-M-POLY - 50V 0.047M-J		C6R30	154P264000	C-CER - R3.15KV 150P-K	
C464	181P184010	C-ELEC - 50V 1000M-M 105C		C6Y11	141P134070	C-CER-CHIP - B16V 1M-K	
C520	142P011000	C-CER - B500V 560P-K		C6Y12	141P142010	C-CER-CHIP - B50V 0.01M-K	
C521	181P358000	C-ELEC - 35V 1000M-M		C6Y13	172P262010	C-M-POLY - 50V 0.047M-J	
C522	142P011000	C-CER - B500V 560P-K		C6Y16	154P353060	C-CER-CHIP - SL50V 100P-J	
C526	142P011000	C-CER - B500V 560P-K		C6Y50	181P352040	C-ELEC - 16V 100M-M	
C527	181P358000	C-ELEC - 35V 1000M-M		C6Y51	154P352040	C-CER-CHIP - SL50V 33P-J	
C529	142P011000	C-CER - B500V 560P-K		C6Y52	154P353080	C-CER-CHIP - SL50V 120P-J	
C531	181P188030	C-ELEC - 160V 2.2M-M 105C		C6Y53	154P351020	C-CER-CHIP - SL50V 10P-J	
C544	172P262050	C-M-POLY - 50V 0.1M-J		C6Y54	154P352060	C-CER-CHIP - SL50V 39P-J	
C547	172P081080	C-PLAST-PP - 200V 0.033M-J		C6Y55	181P352020	C-ELEC - 16V 33M-M	
C549	172P262030	C-M-POLY - 50V 0.068M-J		C6Y56	181P352070	C-ELEC - 16V 470M-M	
C551	181P188030	C-ELEC - 160V 2.2M-M 105C		C6Y57	141P142010	C-CER-CHIP - B50V 0.01M-K	
C552	172P173010	C-M-PLA-PP - 1600V 9100P-J		C6Y58	141P133010	C-CER-CHIP - B10V 3.3M-M	
C554	189P071080	C-M-PLA-PP - 200V 0.47M-J		C6Y59	181P352030	C-ELEC - 16V 47M-M	
C555	142P011000	C-CER - B500V 560P-K		C6Y61	141P142010	C-CER-CHIP - B50V 0.01M-K	
C556	154P262050	C-CER - R2KV 560P-K		C700	141P140060	C-CER-CHIP - B50V 560P-K	
C557	172P171020	C-M-PLA-PP - 1600V 8200P-J		C701	141P140090	C-CER-CHIP - B50V 1000P-K	
C560	189P071050	C-M-PLA-PP - 200V 0.33M-J		C702	141P140010	C-CER-CHIP - B50V 220P-K	
C562	181P352040	C-ELEC - 16V 100M-M		C703	141P134070	C-CER-CHIP - B16V 1M-K	
C565	142P011030	C-CER - B500V 1000P-K		C712	141P142010	C-CER-CHIP - B50V 0.01M-K	
C566	181P195070	C-ELEC - 350V 33M-M		C713	154P341090	C-CER-CHIP - CH50V 22P-J	
C568	154P262050	C-CER - R2KV 560P-K		C715	154P341090	C-CER-CHIP - CH50V 22P-J	
C569	181P195050	C-ELEC - 350V 1M-M		C716	141P143030	C-CER-CHIP - B16V 0.1M-K	
C572	142P011030	C-CER - B500V 1000P-K		C717	154P341090	C-CER-CHIP - CH50V 22P-J	
C573	154P262000	C-CER - R2KV 220P-K		C718	154P341090	C-CER-CHIP - CH50V 22P-J	
C584	181P352040	C-ELEC - 16V 100M-M		C719	141P142010	C-CER-CHIP - B50V 0.01M-K	

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719, (6) VS-70709

Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
C720	141P142010	C-CER-CHIP - B50V 0.01M-K		C8D07	154P344070	C-CER-CHIP - CH50V 330P-J	
C721	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D08	154P343070	C-CER-CHIP - CH50V 120-J	
C722	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D09	154P344070	C-CER-CHIP - CH50V 330P-J	
C762	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D11	154P344070	C-CER-CHIP - CH50V 330P-J	
C77A0	181P352030	C-ELEC - 16V 47M-M		C8D12	154P343070	C-CER-CHIP - CH50V 120-J	
C795	154P355020	C-CER-CHIP - SL50V 470P-J		C8D13	154P345030	C-CER-CHIP - CH25V 560P-J	
C799	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D15	154P344050	C-CER-CHIP - CH50V 270P-J	
C7A00	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D16	181P352030	C-ELEC - 16V 47M-M	
C7A01	141P142010	C-CER-CHIP - B50V 0.01M-K		C8D17	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A03	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D18	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A12	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D19	181P352030	C-ELEC - 16V 47M-M	
C7A16	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D20	181P352030	C-ELEC - 16V 47M-M	
C7A17	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D21	181P352030	C-ELEC - 16V 47M-M	
C7A62	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D22	181P352030	C-ELEC - 16V 47M-M	
C7A63	181P352030	C-ELEC - 16V 47M-M		C8D23	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A64	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D24	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A90	181P352050	C-ELEC - 16V 220M-M	5&6	C8D25	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A98	181P352030	C-ELEC - 16V 47M-M		C8D26	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7A99	141P143030	C-CER-CHIP - B16V 0.1M-K		C8D27	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7K23	181P352030	C-ELEC - 16V 47M-M	5&6	C8D28	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C7K25	172P262050	C-M-POLY - 50V 0.1M-J	5&6	C8D30	181P352030	C-ELEC - 16V 47M-M	
C7K26	172P262050	C-M-POLY - 50V 0.1M-J	5&6	C8D31	181P352030	C-ELEC - 16V 47M-M	
C842	154P342090	C-CER-CHIP - CH50V 56P-J		C8D32	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C844	154P342090	C-CER-CHIP - CH50V 56P-J		C8D33	181P352030	C-ELEC - 16V 47M-M	
C845	154P342090	C-CER-CHIP - CH50V 56P-J		C8D34	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C847	154P342090	C-CER-CHIP - CH50V 56P-J		C8D35	172P262040	C-M-POLY - 50V 0.082M-J	
C848	154P342090	C-CER-CHIP - CH50V 56P-J		C8D36	181P352030	C-ELEC - 16V 47M-M	
C849	154P342090	C-CER-CHIP - CH50V 56P-J		C8D37	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C852	154P343070	C-CER-CHIP - CH50V 120-J		C8D38	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C03	181P186010	C-ELEC - 50V 220M-M 105C		C8D39	181P352030	C-ELEC - 16V 47M-M	
C8C04	181P186010	C-ELEC - 50V 220M-M 105C		C8D40	181P352030	C-ELEC - 16V 47M-M	
C8C05	181P352040	C-ELEC - 16V 100M-M		C8D41	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C06	141P143080	C-CER-CHIP - F50V 0.01M-Z		C8D42	181P352040	C-ELEC - 16V 100M-M	
C8C07	181P352040	C-ELEC - 16V 100M-M		C8D43	181P352030	C-ELEC - 16V 47M-M	
C8C08	141P143080	C-CER-CHIP - F50V 0.01M-Z		C8D44	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C12	181P186000	C-ELEC - 50V 100M-M 105C		C8D45	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C13	141P143080	C-CER-CHIP - F50V 0.01M-Z		C8D46	154P354000	C-CER-CHIP - SL50V 150P-J	
C8C14	181P186000	C-ELEC - 50V 100M-M 105C		C8D47	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C15	141P143080	C-CER-CHIP - F50V 0.01M-Z		C8E01	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C16	154P353060	C-CER-CHIP - SL50V 100P-J		C8E02	181P352030	C-ELEC - 16V 47M-M	
C8C17	154P354000	C-CER-CHIP - SL50V 150P-J		C8E03	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C18	154P353060	C-CER-CHIP - SL50V 100P-J		C8E04	181P352030	C-ELEC - 16V 47M-M	
C8C19	154P354000	C-CER-CHIP - SL50V 150P-J		C8E05	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C20	154P353060	C-CER-CHIP - SL50V 100P-J		C8E06	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C21	154P354000	C-CER-CHIP - SL50V 150P-J		C8E09	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C29	141P140090	C-CER-CHIP - B50V 1000P-K		C8E10	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C30	154P353060	C-CER-CHIP - SL50V 100P-J		C8E13	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C31	154P354000	C-CER-CHIP - SL50V 150P-J		C8E14	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C32	154P353060	C-CER-CHIP - SL50V 100P-J		C8E29	141P143080	C-CER-CHIP - F50V 0.01M-Z	
C8C33	141P140090	C-CER-CHIP - B50V 1000P-K		C901	189P153040	C-M-POLY - 250VAC 0.1M-M	
C8C34	154P353060	C-CER-CHIP - SL50V 100P-J		C902	189P153040	C-M-POLY - 250VAC 0.1M-M	
C8C35	141P140090	C-CER-CHIP - B50V 1000P-K		C903	189P185070	C-CER - 250VAC 1000P-M	
C8C36	154P354000	C-CER-CHIP - SL50V 150P-J		C904	189P185070	C-CER - 250VAC 1000P-M	
C8C37	154P354000	C-CER-CHIP - SL50V 150P-J		C910	189P152070	C-M-POLY - 250VAC 0.01M-M	
C8D01	154P344070	C-CER-CHIP - CH50V 330P-J		C911	189P152070	C-M-POLY - 250VAC 0.01M-M	
C8D02	154P343070	C-CER-CHIP - CH50V 120-J		C922	142P020010	C-CER - B50V 220P-K	
C8D03	154P344070	C-CER-CHIP - CH50V 330P-J		C923	181P182030	C-ELEC - 16V 1000M-M 105C	
C8D04	154P343070	C-CER-CHIP - CH50V 120-J		C924	172P083010	C-PLAST-PP - 400V 0.015M-K	
C8D05	154P344070	C-CER-CHIP - CH50V 330P-J		C936	181P352040	C-ELEC - 16V 100M-M	
C8D06	154P343070	C-CER-CHIP - CH50V 120-J		C939	181P352040	C-ELEC - 16V 100M-M	

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-45609, (2) VS-50609, (3) VS-55609, (4) VS-60609, (5) VS-60719. (6) VS-70709

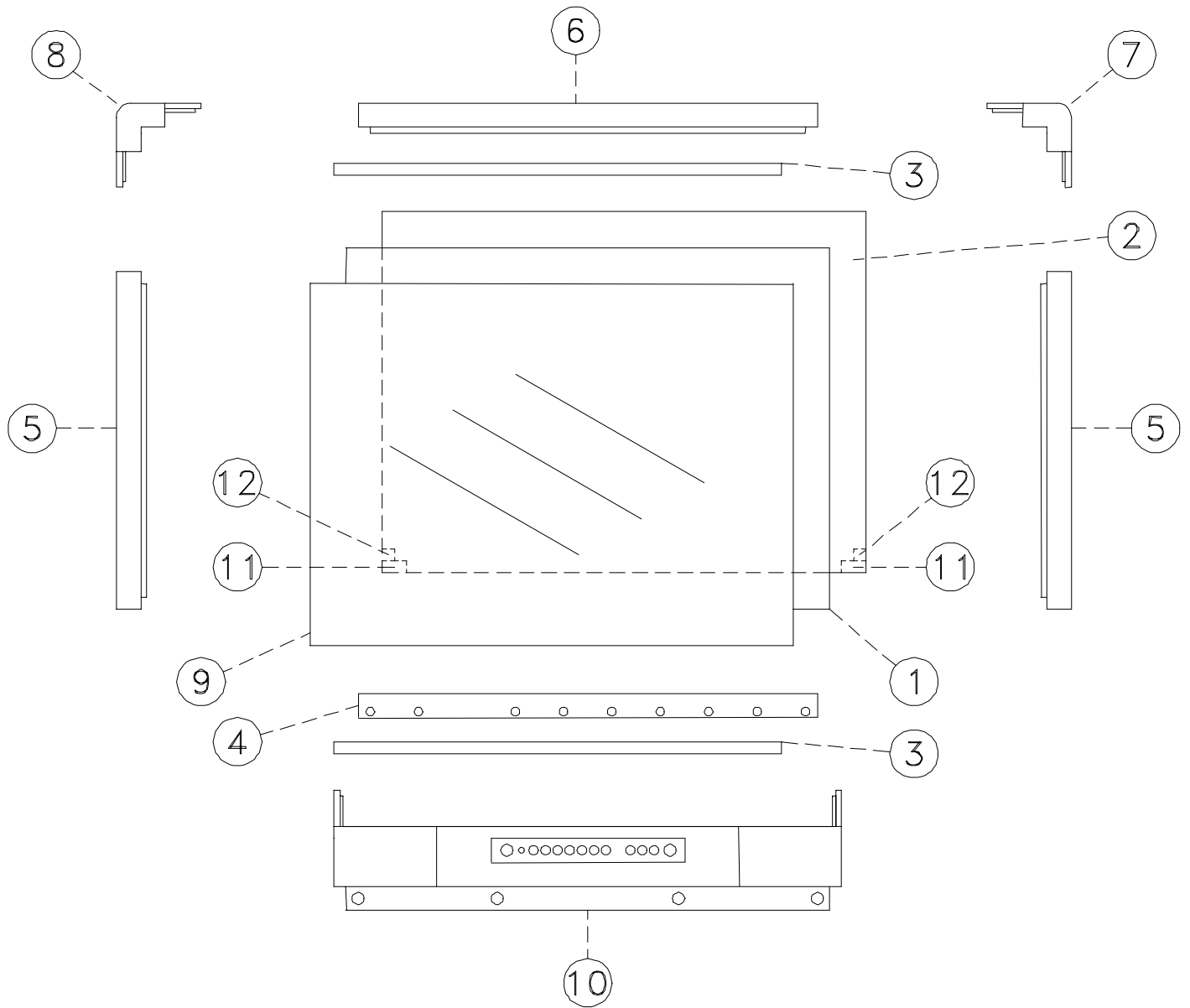
Ref #	Part #	Part Name & Description	[#]	Ref #	Part #	Part Name & Description	[#]
C948	142P020010	C-CER - B50V 220P-K		F904	283D060030	FUSE-UL - S6.3A	
C951	189P185090	C-CER - 250VAC 2200P-M		K903	287P103010	RELAY-POWER - DG12D2-0(M)	
C952	189P185090	C-CER - 250VAC 2200P-M		PC951	268P102010	PHOTO-COUPLER - TLP421 - (GR)	
C954	189P185090	C-CER - 250VAC 2200P-M		PC952	268P102010	PHOTO-COUPLER - TLP421 - (GR)	
C955	189P185090	C-CER - 250VAC 2200P-M		PJ2J11	440C329040	PIN-JACK-BOARD-6P-S	
C957	185D102060	C-ELEC - H200V 1500M-M		PJ2J21	440C329030	PIN-JACK-BOARD-6P-S	
C958	154P260070	C-CER - R1KV 2200P-K		PJ2J31	440C350010	PIN-JACK-BOARD-5P-S	
C967	142P011000	C-CER - B500V 560P-K		PJ701	451C129010	JACK-MINI - AV NET/IR BLAST	5&6
C969	185D121020	C-ELEC - H180V 470M-M 105C		PJ702	451C129010	JACK-MINI - AV NET/IR BLAST	5&6
C970	185D120010	C-ELEC - H160V 330M-M 105C		PJ79B0	440C231010	JACK-3PIN - FRONT A/V INPUT	
C972	181P352040	C-ELEC - 16V 100M-M		TU1A01	295P500010	TUNER-RF - ENG26515G	
C973	181P182070	C-ELEC - 16V 6800M-M 105C		TU1B01	295P483030	TUNER-RF - ENG26526G	
C977	185D163020	C-ELEC - H50V 4700M-M 105C		X2031	285P374050	QUARTS-CRYST - 20.000MHZ	
C978	142P011000	C-CER - B500V 560P-K		X2V00	285P287010	QUARTZ-CRYST - 3.579545MHZ	
C993	154P260050	C-CER - R1KV 1000P-K		X3A01	299P208010	CERAMIC-OSC - C5B503F58	
C9A01	181P352040	C-ELEC - 16V 100M-M		X6P00	285P402010	QUARTZ-CRYST - 20.250MHZ	
C9A02	141P143030	C-CER-CHIP - B16V 0.1M-K		X713	285P374040	QUARTZ-CRYST - 10.000MHZ	
SWITCHES				Z7K01	939P617010	UNIT-PREAMP - GP1U283Q	
S7A00	432P089010	SW-KEY-BOARD - PUSH-ON		PRINTED CIRCUIT BOARDS			
S7A01	432P089010	SW-KEY-BOARD - PUSH-ON		930B874001	ASSY-PWB-MAIN		
S7A02	432P089010	SW-KEY-BOARD - PUSH-ON		930B875001	ASSY-PWB-SIGNAL		1-4
S7A03	432P089010	SW-KEY-BOARD - PUSH-ON		930B875002	ASSY-PWB-SIGNAL		5&6
S7A04	432P089010	SW-KEY-BOARD - PUSH-ON		935C938001	ASSY-PWB-FOR CRT		
S7A05	432P089010	SW-KEY-BOARD - PUSH-ON		935C951001	ASSY-PWB-TERMINAL		
S7A06	432P089010	SW-KEY-BOARD - PUSH-ON		935D554001	ASSY-PWB-PREAMP		1-4
S7A07	432P089010	SW-KEY-BOARD - PUSH-ON		935D554002	ASSY-PWB-PREAMP		5&6
S7A08	432P089010	SW-KEY-BOARD - PUSH-ON		935D555001	ASSY-PWB-DBF		
MISCELLANEOUS				935D556001	ASSY-PWB-CONTROL-1		
330P284010	DEFL-YOKE			935D557001	ASSY-PWB-FRONT-1		
411D024010	CORE-FERRITE			935D614001	ASSY-PWB-APERTURE		
411D033010	CORE-FERRITE			COSMETIC PARTS			
449C141030	SOCKET-CRT			242D483020	IR-MOUSE		5&6
453B035010	CAP-ANODE - SHORT - RED			246C351030	AC-POWER-CORD		
453B035020	CAP-ANODE - LONG - G&B			305P702020	RF-SW - YAA41-0126G		
453C021030	LEAD-ANODE - FBT-HV			622C074010	BOARD TOP - 50"		
480P039010	SPEAKER		1-4	642C330010	BOARD-REAR - 70"		6
480P053010	SPEAKER		5&6	702A385050	PANEL-CONTROL		1
589C062010	CASTER			702A385060	PANEL-CONTROL		2
642C340010	BOARD-MIRROR		6	702A391080	PANEL-CONTROL		3
642C352010	CLIP-MIRROR		1-5	702A391090	PANEL-CONTROL		4&5
669D514070	SCREW-MIRROR BOARD			702A393030	PANEL-CONTROL		6
767D048050	MIRROR - 60"		4&5	703B031020	DOOR - FRONT A/V IN COVER		
767D048080	MIRROR - 70"		6	761A157030	GRILLE-SP - 45"		1
767D055010	MIRROR - 45"		1	761A157070	GRILLE-SP - 55"		3
767D055020	MIRROR - 50"		2	761A158020	GRILLE-SP - 50"		2
767D055030	MIRROR - 55"		3	761A159020	GRILLE-SP - 60"		4
920P016010	HV-BLOCK - MSC102			761A159030	GRILLE-SP - 60"		5
490P154010	LENS:RED/BLUE		1&2	761A171020	GRILLE-SP - 70"		6
490P154020	LENS:GREEN		1&2	853B291010	REGISTRATION-CARD		
490P174010	LENS:RED		3-6	ACCESSORIES			
490P174020	LENS:GREEN		3-6	290P103030	REMOTE CONTROL - VZ9		1-4
490P174030	LENS:BLUE		3-6	290P103040	REMOTE CONTROL - VZ9+		5&6
AG5K00	224D019040	AIR-GAP - 2.0+-0.5KV S.LEAD		871B195020	IB - OWNERS GUIDE		6
DL6Y50	337P134010	DELAY-LINE		871D307010	IB - OWNERS GUIDE		
DL6Y90	409P900010	LP-FILTER - 7MHZ SMD		871D328010	QR-GUIDE		
F901	283D060020	FUSE-UL - S5A					
F902	283D035070	FUSE - S2A					
F903	283D038070	FUSE-UL - S4A					

MODELS: VS-45609 / VS-50609 / VS-55609 / VS-60609 / VS-60719 / VS-70709

[#] Model Legend: (1) VS-50805, (2) VS-60805, (3) WS-55805, (4) WS-55905, (5) WS-65905, (6) WS-73905, (7) WT-46805

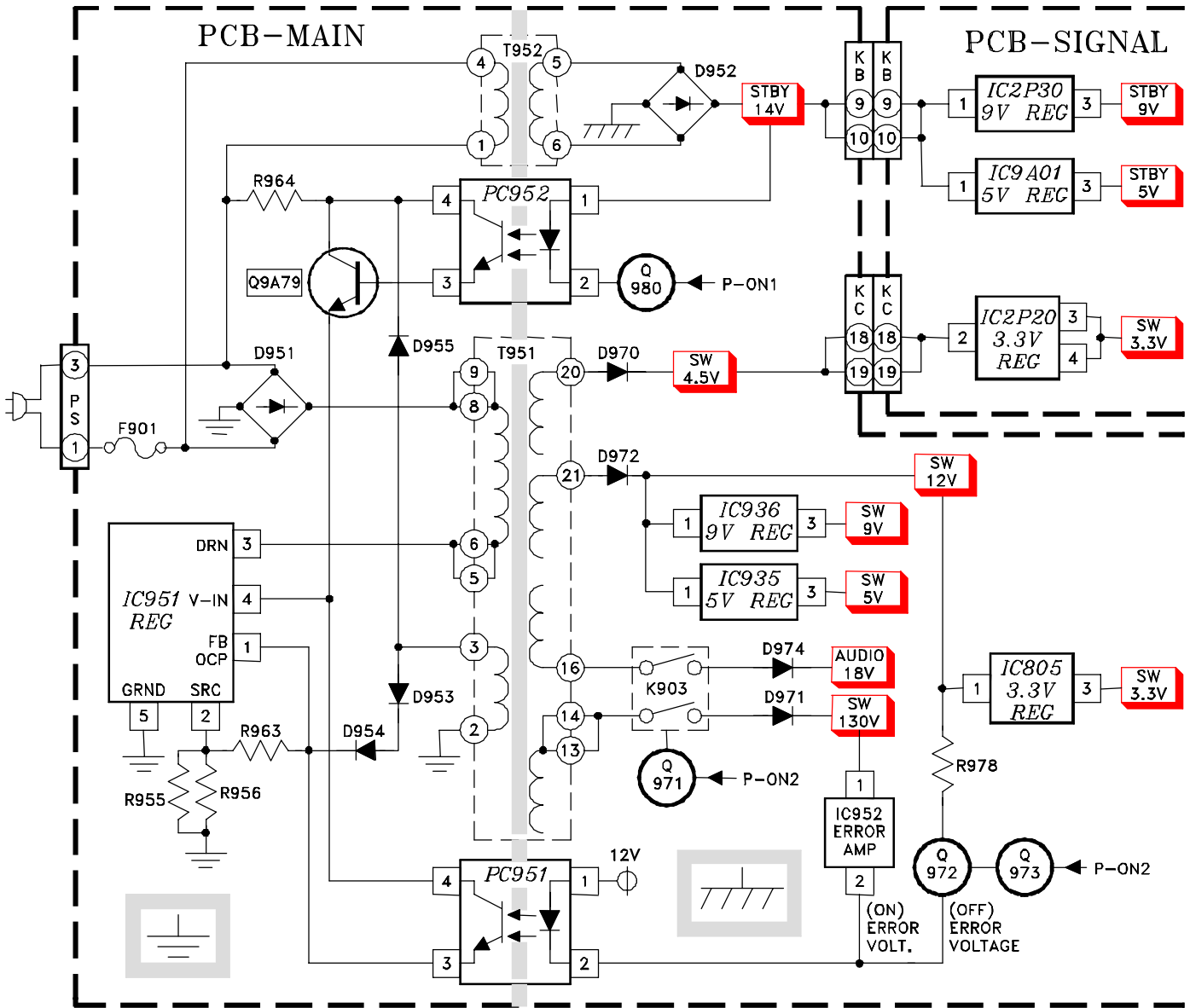
Ref #	Part #	Part Name & Description	Ref #	Part #	Part Name & Description
SCREEN PARTS					
VS-45609			(4)	622C063030	HOLDER-SCREEN-BOT
(1)	491P075010	SCREEN-LENTICULAR	(5)	701B394070	FRAME-SCREEN-SIDE - 55"
(2)	491P076010	LENS-FRESNEL	(6)	701B400070	FRAME-SCREEN-TOP - 55"
(4)	622C059010	HOLDER-SCREEN-BOT	(8)	702A388030	CAP-CORNER-LEFT
(3)	622C060010	HOLDER SCREEN-DS	(7)	702A388040	CAP-CORNER-RIGHT
(11)	622D757050	CUSHION-CORNERS	(9)	760D627020	DIAMOND SHIELD
(12)	622D757060	CUSHION-CORNERS	VS-60609 & VS-60719		
(5)	701B394030	FRAME-SCREEN-SIDE - 45"	(1)	491P109010	SCREEN-LENTICULAR
(6)	701B400050	FRAME-SCREEN-TOP - 45"	(2)	491P110010	LENS-FRESNEL
(8)	702A388030	CAP-CORNER-LEFT	(3)	622C060040	CLIP-SCREEN-TOP/BOT
(7)	702A388040	CAP-CORNER-RIGHT	(11)	622D757050	CUSHION-CORNERS
(9)	760D628040	DIAMOND SHIELD	(12)	622D757060	CUSHION-CORNERS
VS-50609			(4)	622C063040	HOLDER-SCREEN-BOT
(1)	491P099010	SCREEN-LENTICULAR	(5)	701B394080	FRAME-SCREEN-SIDE - 60"
(2)	491P100010	LENS-FRESNEL	(6)	701B400080	FRAME-SCREEN-TOP - 60"
(3)	622C060020	CLIP-SCREEN-TOP/BOT	(8)	702A388030	CAP-CORNER-LEFT
(11)	622D757050	CUSHION-CORNERS	(7)	702A388040	CAP-CORNER-RIGHT
(12)	622D757060	CUSHION-CORNERS	(9)	760D627030	DIAMOND SHIELD
(4)	622C063020	HOLDER-SCREEN-BOT	VS-70709		
(5)	701B394060	FRAME-SCREEN-SIDE - 50"	(1)	491P107020	SCREEN-LENTICULAR
(6)	701B400060	FRAME-SCREEN-TOP - 50"	(2)	491P108020	LENS-FRESNEL
(8)	702A388030	CAP-CORNER-LEFT	(3)	622C059050	HOLDER-SCREEN-BOT
(7)	702A388040	CAP-CORNER-RIGHT	(11)	622C060050	CLIP-SCREEN-TOP/BOT
(9)	760D627010	DIAMOND SHIELD	(12)	622D757050	CUSHION-CORNERS
VS-55609			(4)	622D757060	CUSHION-CORNERS
(1)	491P101010	SCREEN-LENTICULAR	(5)	701B425010	FRAME-SCREEN-TOP - 70"
(2)	491P102010	LENS-FRESNEL	(6)	701B426010	FRAME-SCREEN-SIDE - 70"
(3)	622C060030	CLIP-SCREEN-TOP/BOT	(8)	702A388030	CAP-CORNER-LEFT
(11)	622D757050	CUSHION-CORNERS	(7)	702A388040	CAP-CORNER-RIGHT
(12)	622D757060	CUSHION-CORNERS	(9)	760D627040	DIAMOND SHIELD
				802B772020	PAD-D.S. SCREEN - 70"

SCREEN ASSEMBLY

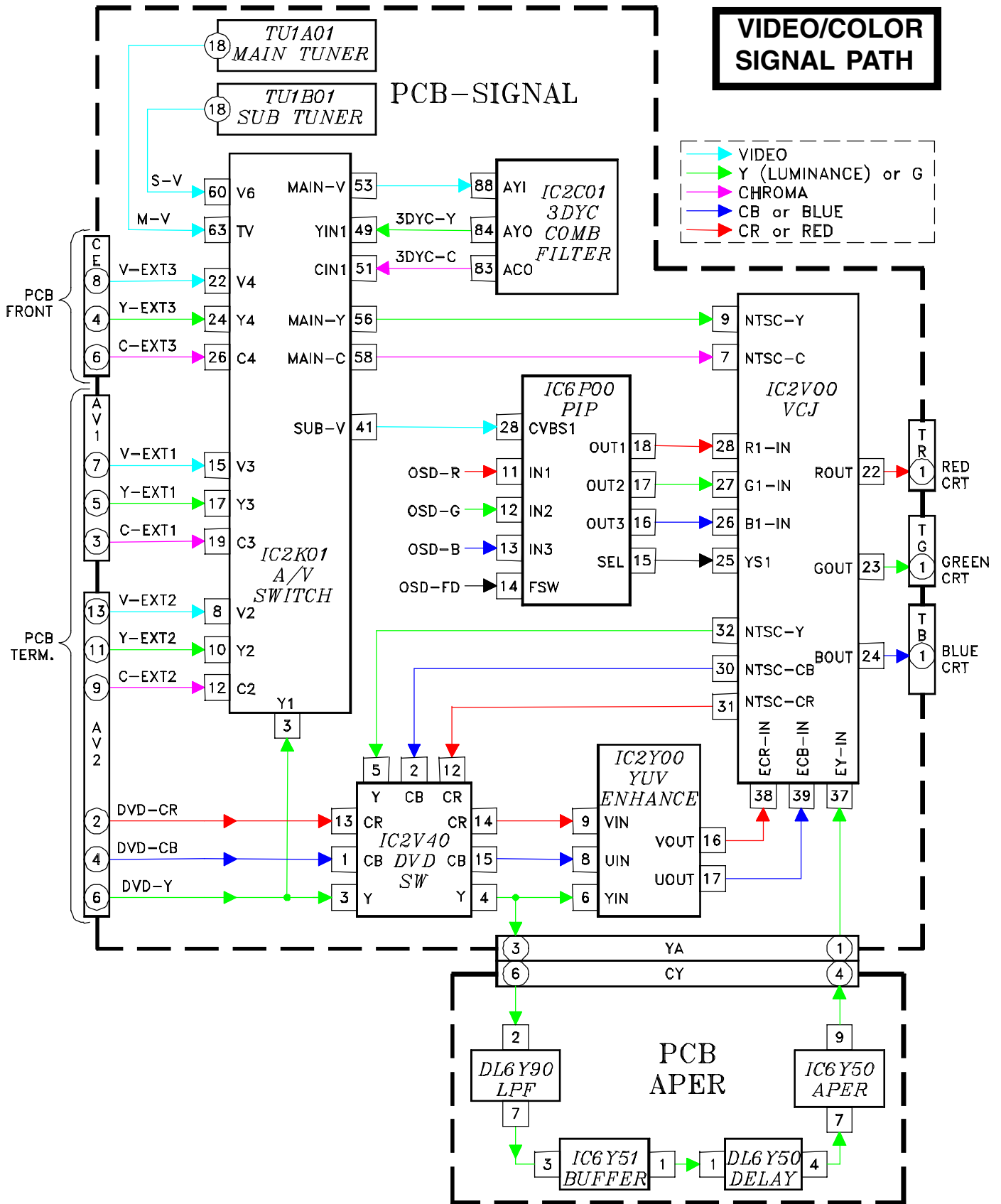


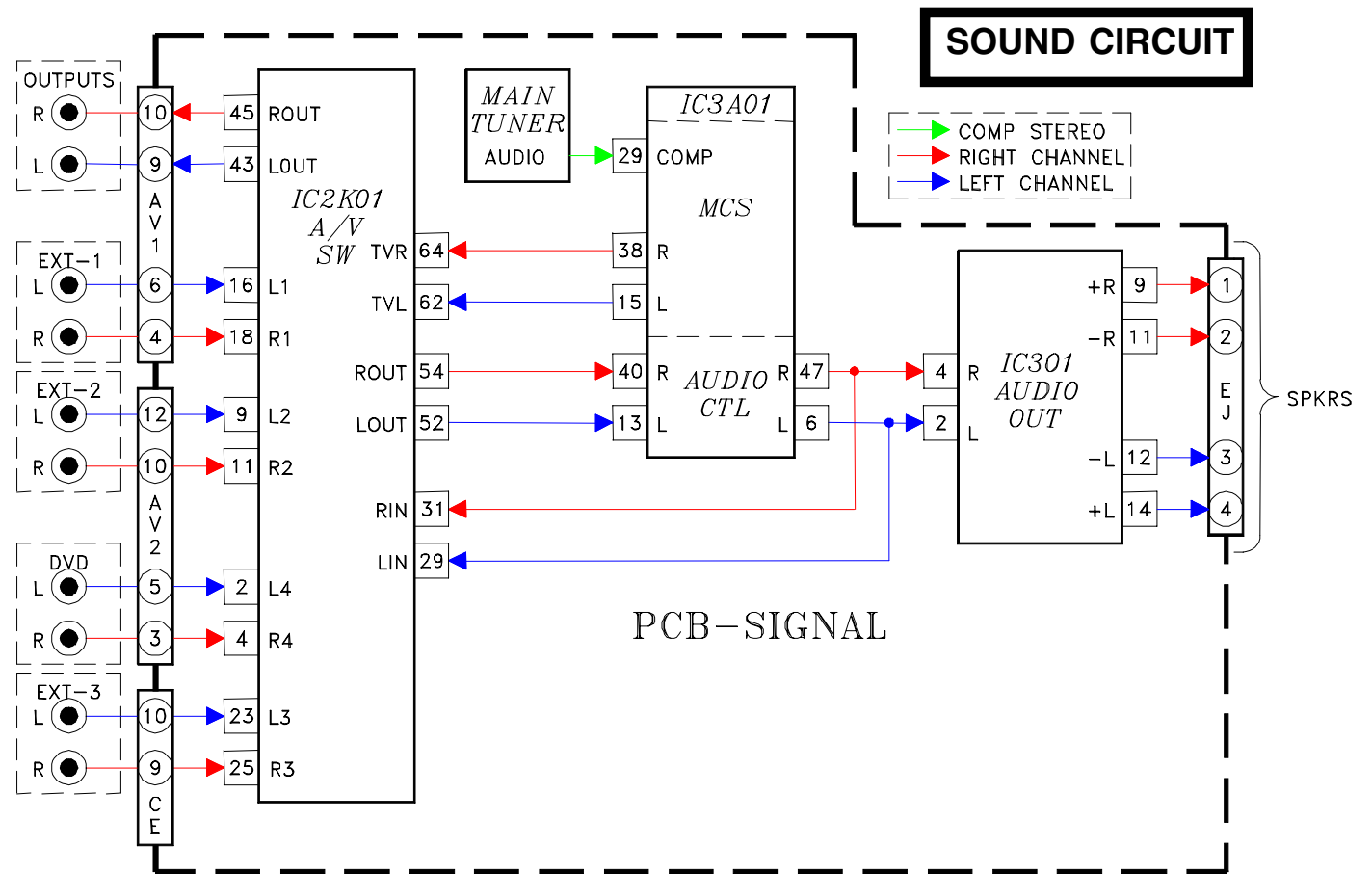
CIRCUITRY BLOCK DIAGRAMS

POWER SUPPLY

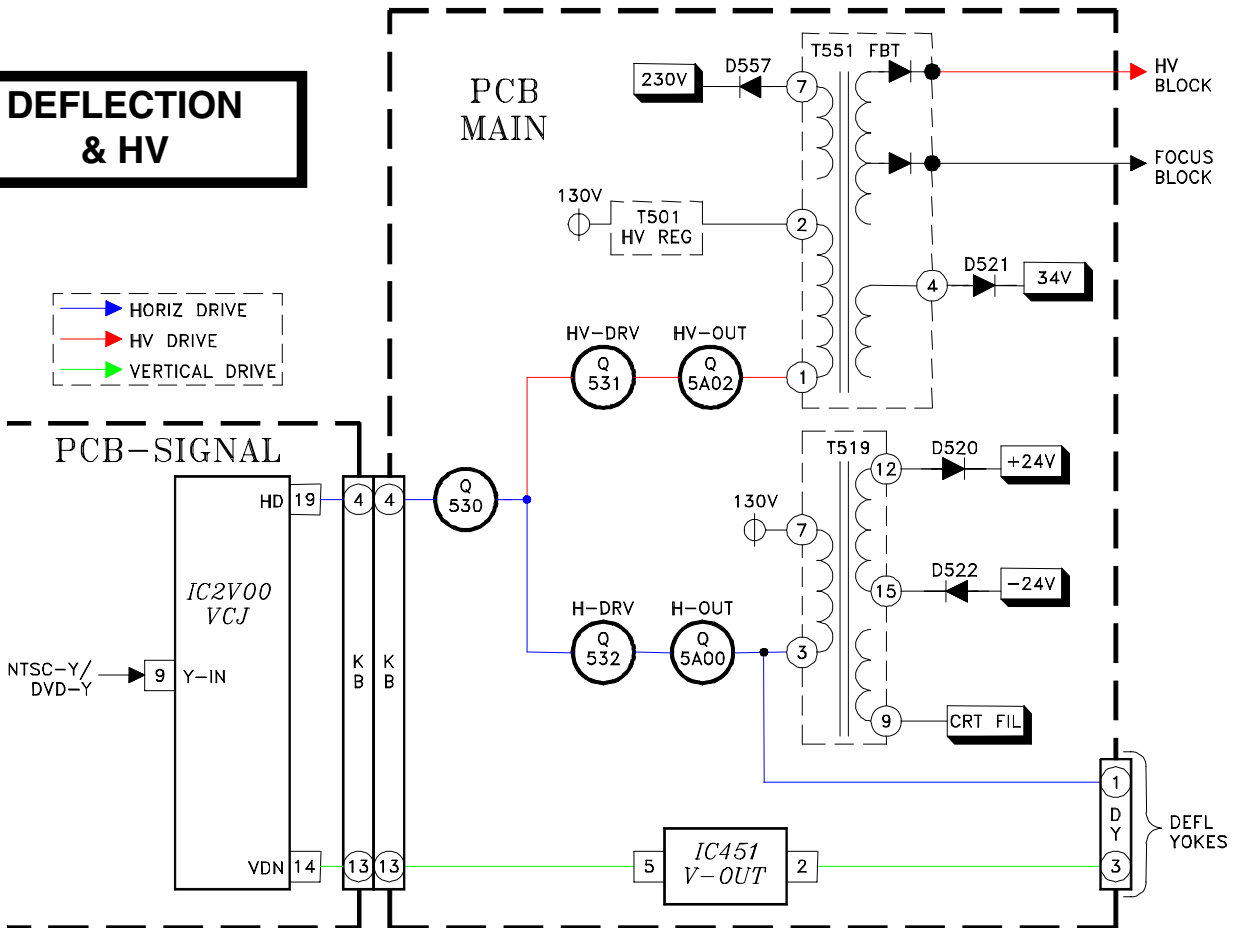


230V 34V +24V -24V CRT FIL.
 REFER TO THE DEFLECTION BLOCK DIAGRAM

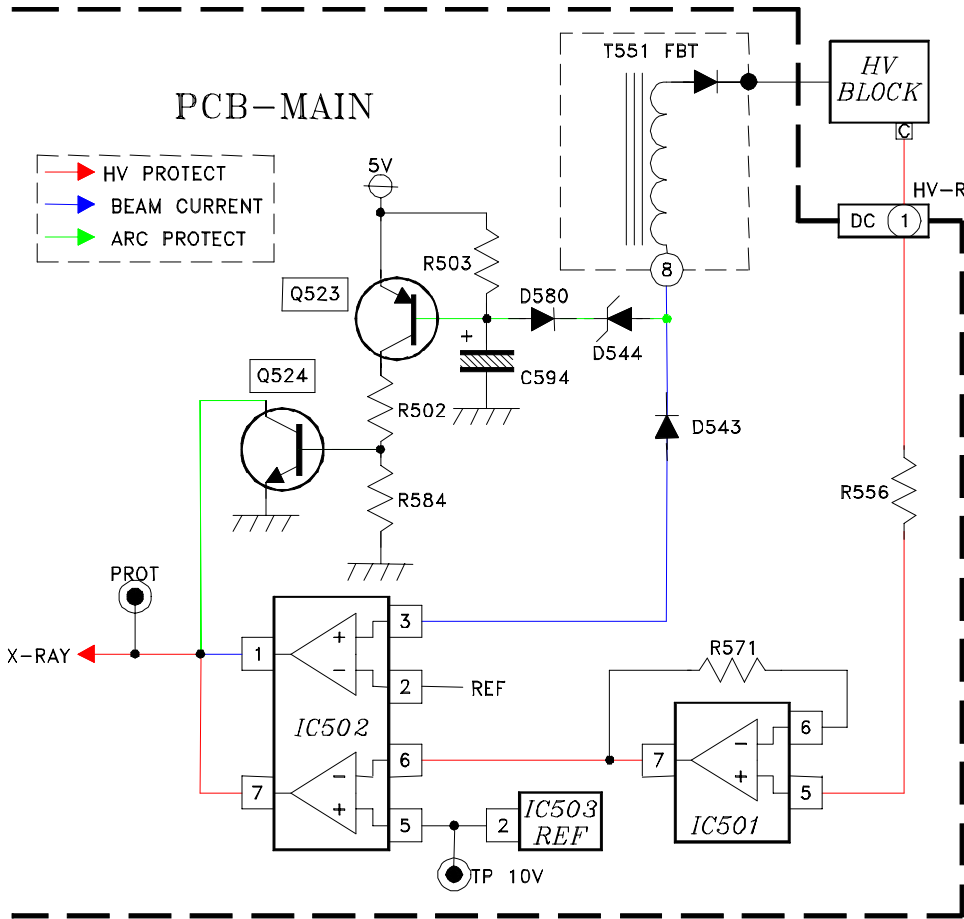




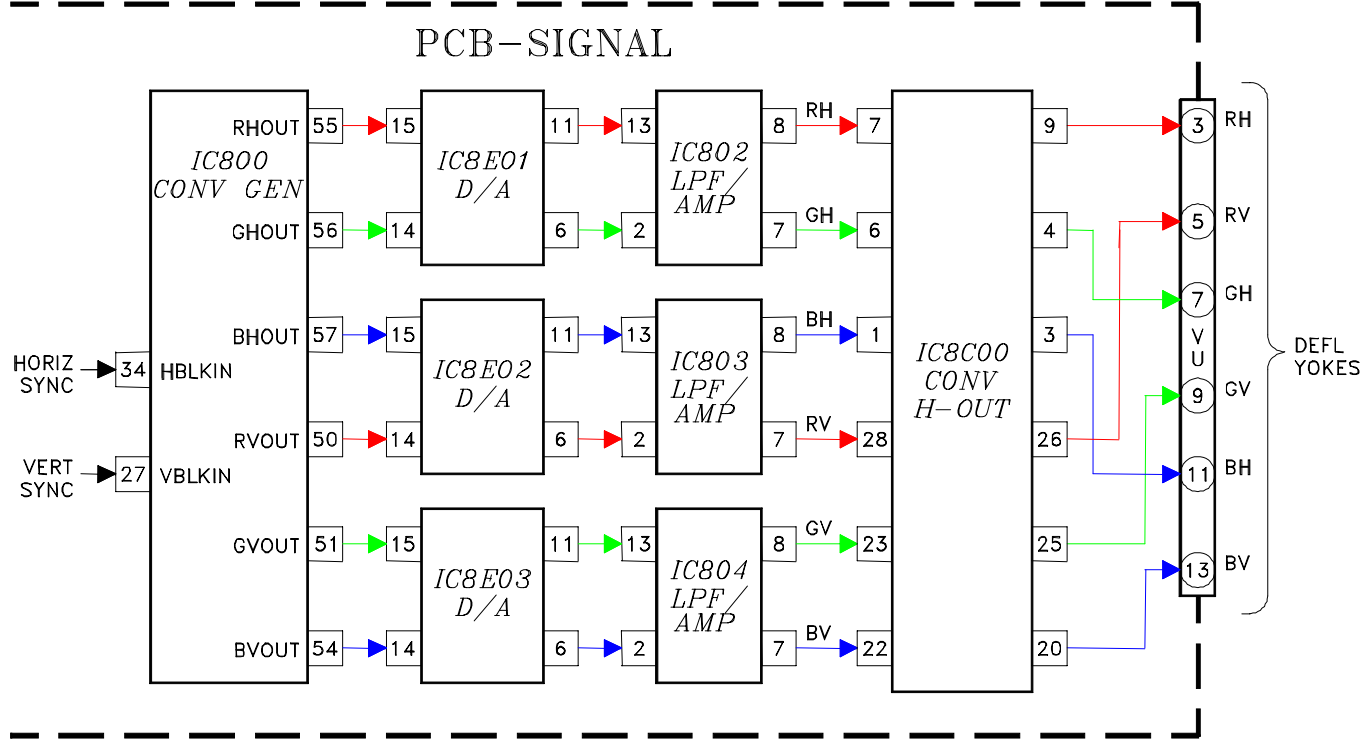
DEFLECTION & HV



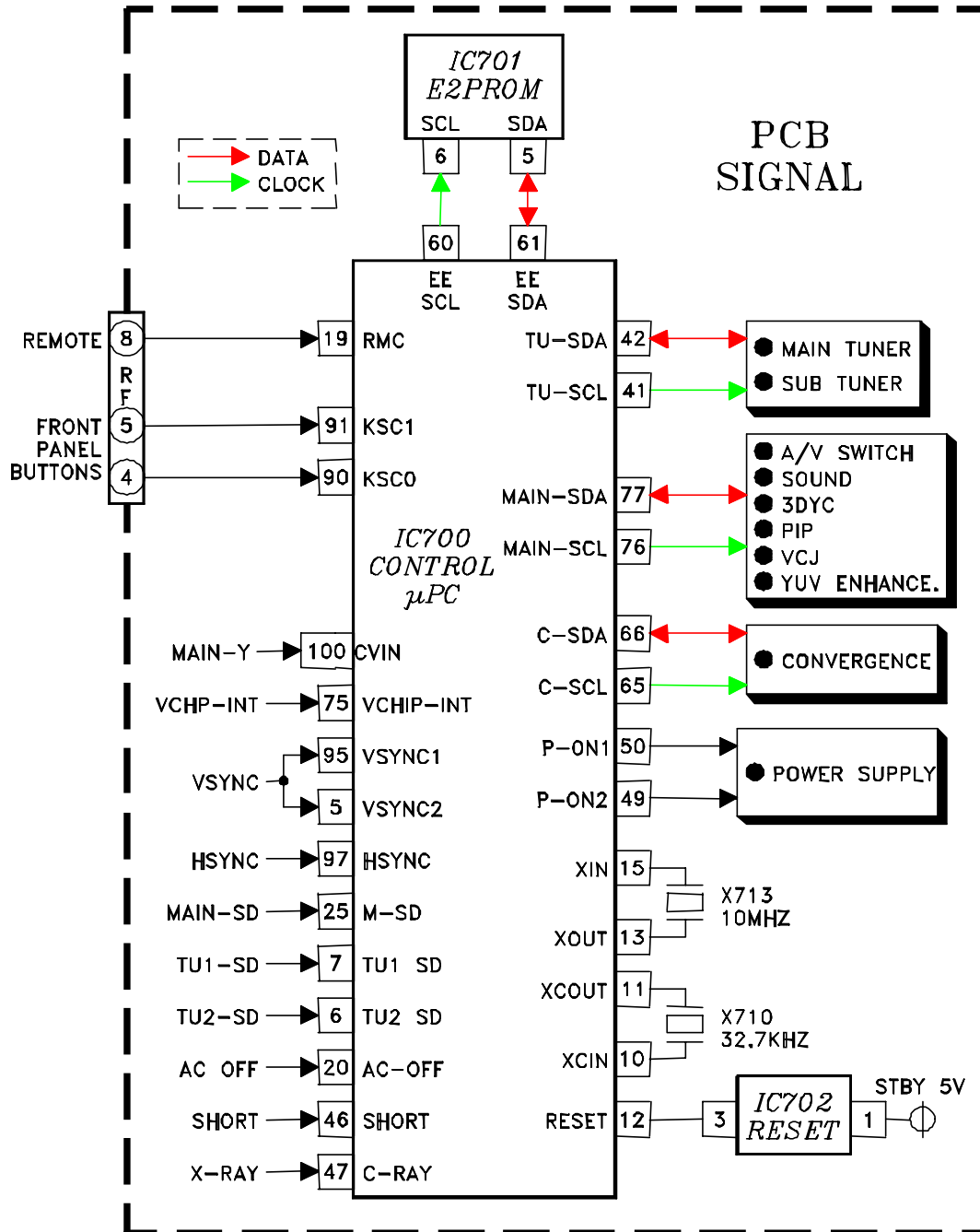
PROTECT CIRCUIT

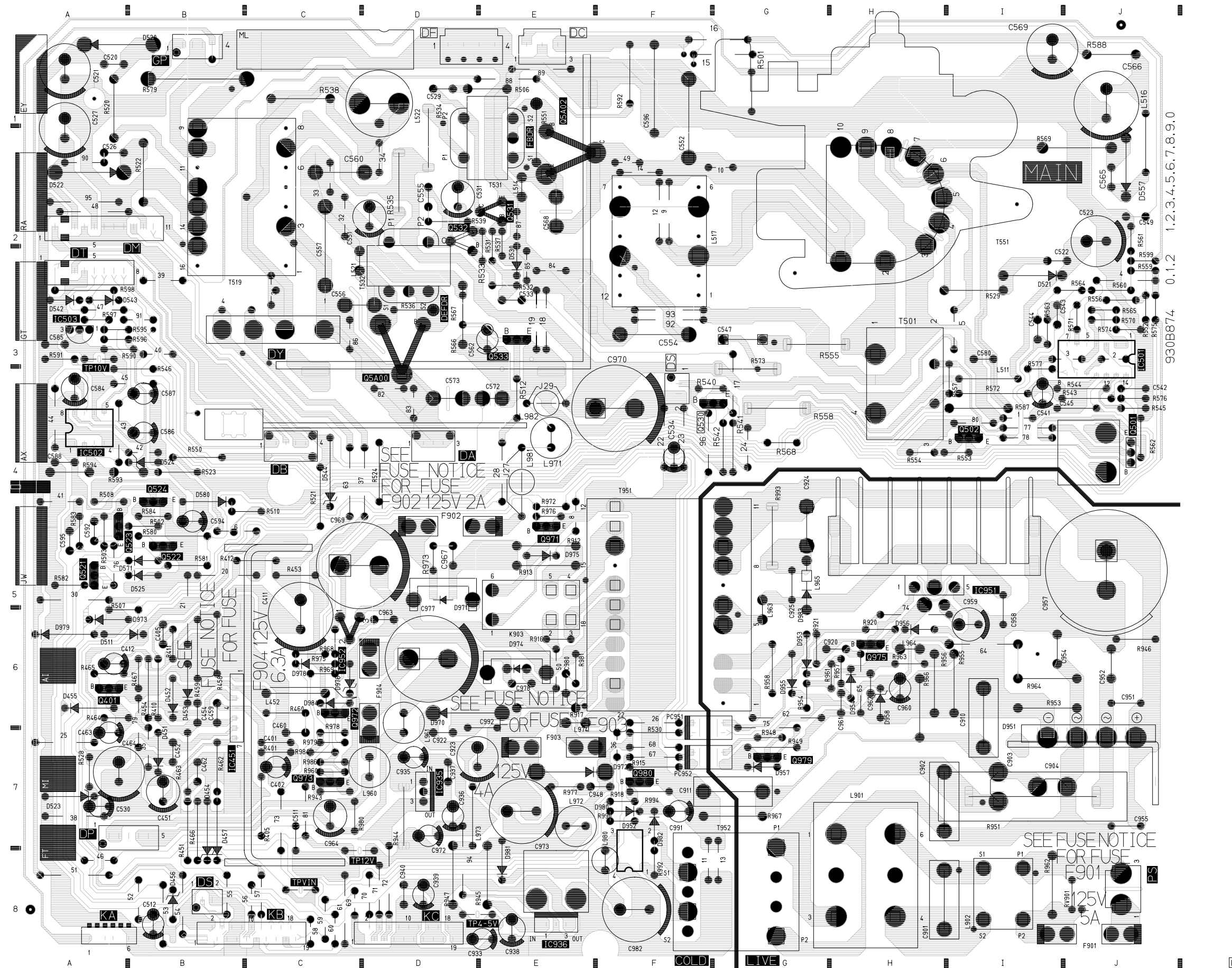


CONVERGENCE CIRCUITRY



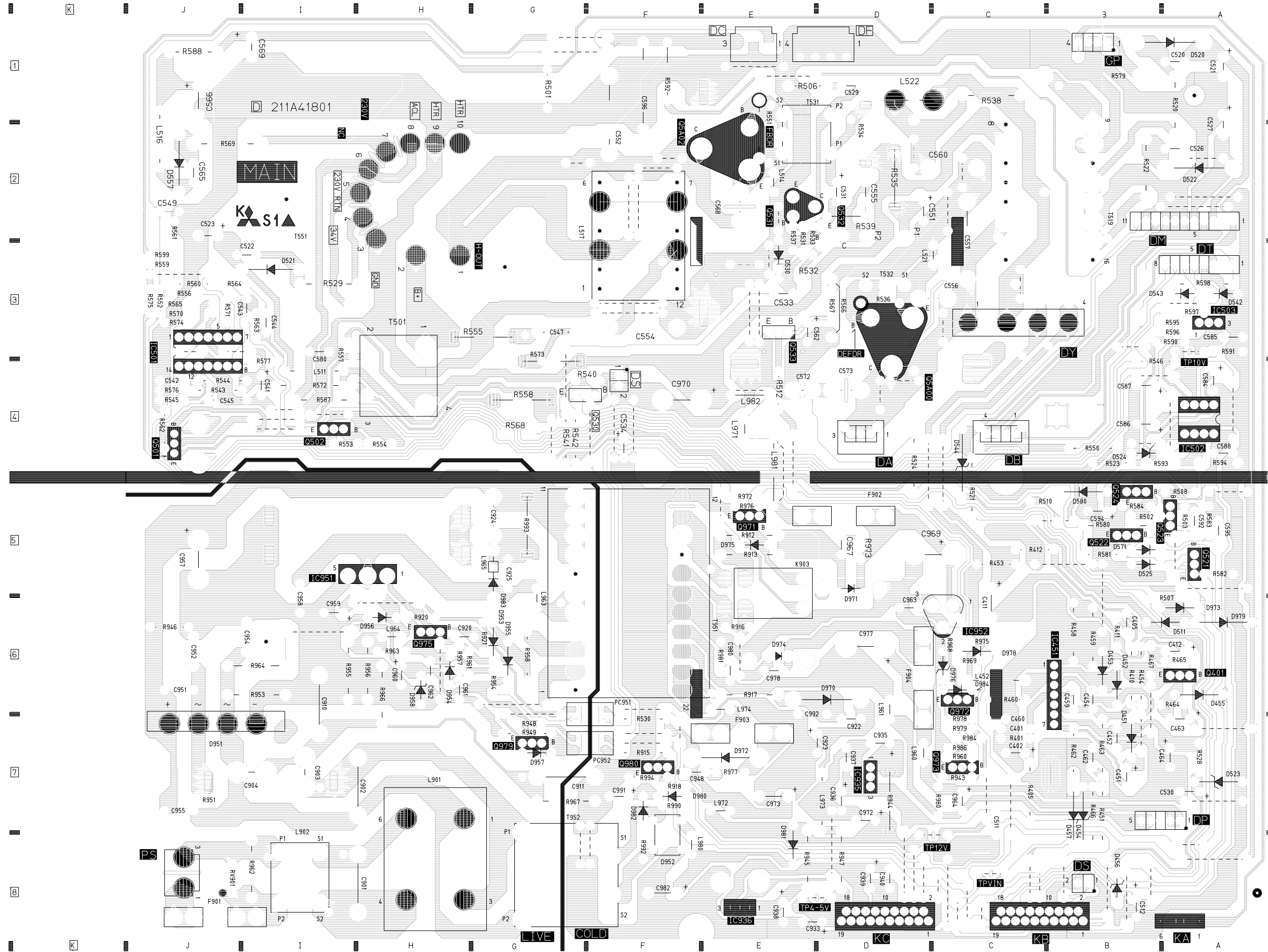
CONTROL CIRCUIT





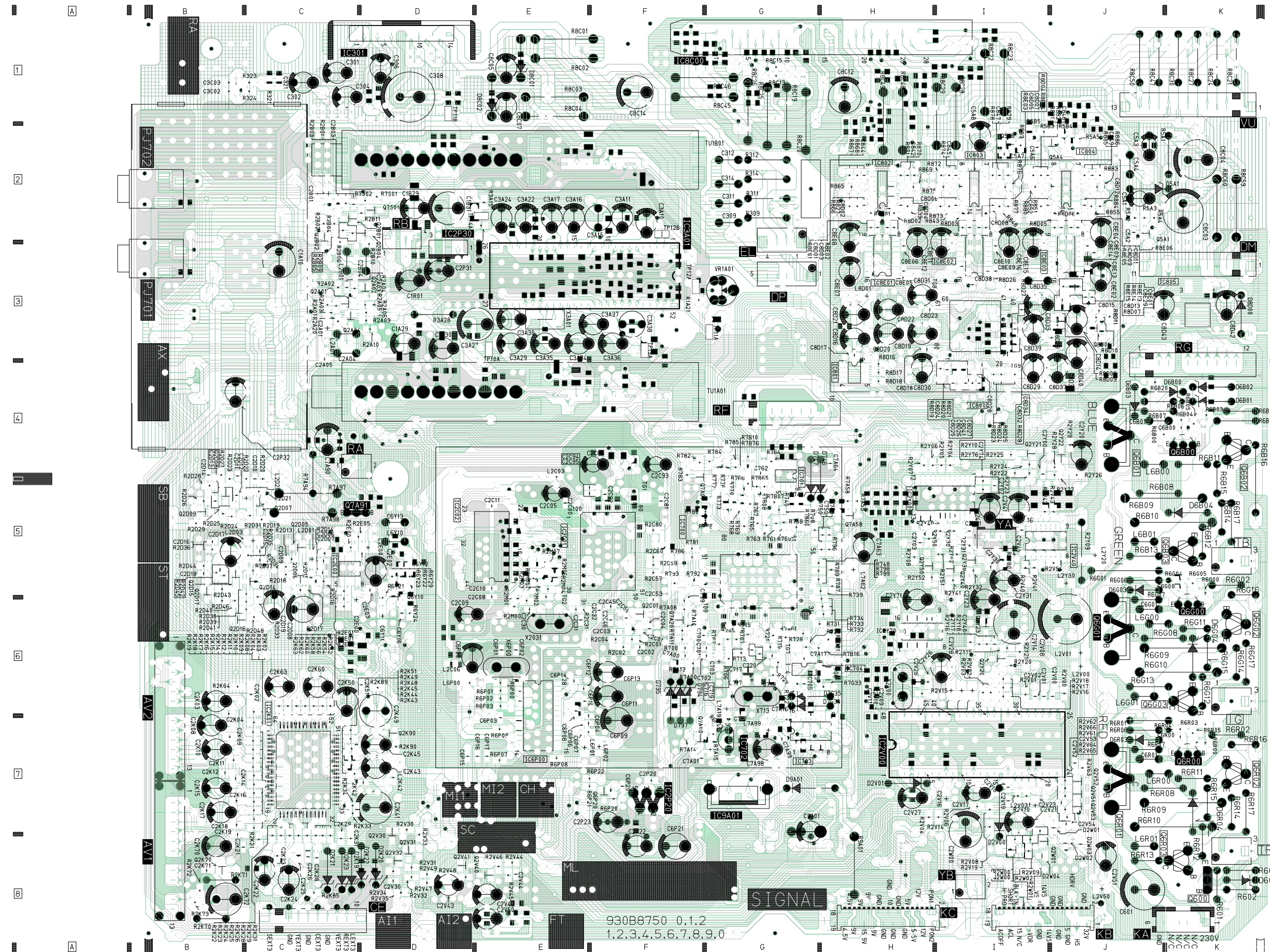
PCB-MAIN

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
D451	B7	L901	H7
D452	B6	L902	I8
D453	B6	L960	D7
D454	B8	L963	G6
D455	A6	L964	H6
D456	B8	L965	G5
D457	B8	L971	E4
D520	A1	L973	D7
D521	I3	L974	E6
D522	A2	L980	F8
D523	A7	PC951	F7
D524	B4	PC952	F7
D525	B5	Q401	A6
D530	E3	Q501	J4
D542	A3	Q502	I4
D543	A3	Q521	A5
D544	C5	Q523	A5
D557	J2	Q524	B5
D571	B5	Q530	F4
D580	B5	Q531	E2
D951	I7	Q532	D2
D952	F7	Q533	E3
D953	G6	Q5A00	D3
D954	H6	Q5A02	E2
D955	G6	Q971	E5
D956	H6	Q972	O6
D957	G7	Q973	C7
D958	H6	Q975	H6
D970	D6	Q979	G7
D971	D5	Q980	F7
D972	E7	RV901	J8
D973	B6	T501	H3
D974	E6	T519	B2
D975	E5	T531	D2
D978	C6	T532	D2
D979	A6	T551	H2
D980	F7	T951	F5
D981	E8	T952	F8
D982	F7	TP10V	A4
D983	G6	TP12V	C8
D984	C6	TP4-5V	D8
F901	J8	TPVIN	C8
F903	E7		
F904	D6		
IC451	B6		
IC501	J3		
IC502	A4		
IC503	A3		
IC935	D7		
IC936	E8		
IC951	H5		
IC952	E6		
K903	C6		
L452	C6		
L511	I4		
L514	E2		
L516	J1		
L517	F2		
L521	C3		
L522	D1		



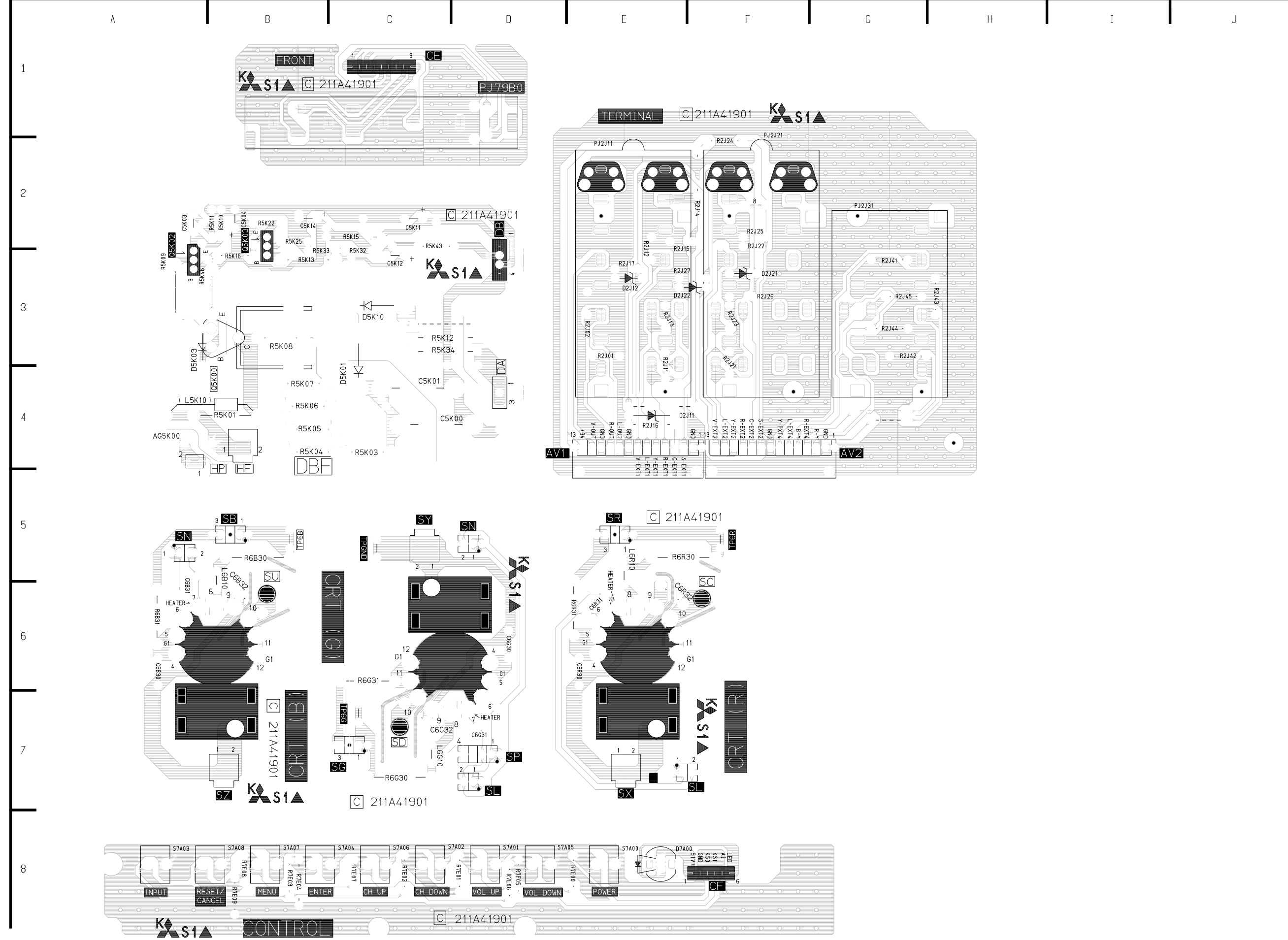
PCB-MAIN

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
D451	B7	L522	D1
D452	B6	L901	H7
D453	B6	L902	I8
D454	B7	L960	D7
D455	A6	L961	D6
D456	B8	L963	G5
D457	B7	L965	G5
D511	A6	L971	E4
D520	A1	L972	E7
D520	E3	L973	D7
D521	I3	L981	E4
D522	A2	L982	E4
D523	A7	PC951	F6
D524	B4	PC952	F7
D525	D5	Q401	A6
D542	A3	Q501	J4
D543	A3	Q502	I4
D544	C4	Q521	A5
D557	J2	Q522	B5
D571	B5	Q523	A5
D580	B5	Q530	G4
D951	J7	Q531	E2
D952	F8	Q532	E2
D953	G6	Q533	E3
D954	H6	Q5A02	F2
D955	G6	Q50A00	D3
D956	H6	Q971	E5
D957	G7	Q972	D6
D958	H6	Q973	C7
D970	D6	Q979	G7
D971	D5	Q980	F7
D972	E7	RV901	J8
D973	A6	T501	H3
D974	E6	T519	B2
D975	E5	T531	E1
D976	D6	T532	D3
D979	A6	T551	I2
D980	F7	T951	G5
D981	E8	T952	G8
D982	F7	T952	F8
D983	G5	TP10V	A4
D984	D6	TP12V	D8
F901	J8	TP4-5V	D8
F902	D5	TPVIN	D8
F903	E7		
F904	D6		
IC451	B6		
IC501	J3		
IC502	A4		
IC503	A3		
IC935	D7		
IC936	I5		
IC951	E8		
IC952	D6		
K903	E5		
L452	D6		
L511	I4		
L517	G2		
L521	D3		
L521	C3		



PCB-SIGNAL

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
D5A1	J2	PJ701	B3
D6B00	K4	PJ702	B2
D6B01	K4	Q2A01	C3
D6B02	K4	Q2A04	C3
D6B03	J4	Q2B01	D2
D6B04	K5	Q2B02	C2
D6G03	J5	Q2B04	D2
D6G04	K6	Q2C01	F6
D746	G5	Q2D05	C5
D747	G5	Q2D06	C5
D794	F6	Q2D07	C5
D795	F6	Q2D09	B5
D797	F6	Q2D14	C5
D7G34	G6	Q2D15	B5
D7G35	G6	Q2D16	B6
D8C01	E1	Q2D17	B5
D8C02	E1	Q2Y20	I6
D8D00	G2	Q2Y21	I4
IC2C01	E5	Q2Y22	J4
IC2C02	D5	Q2Y23	I6
IC2E00	C5	Q2Y30	I5
IC2P30	D2	Q2Y40	I5
IC2V40	J5	Q2Y50	H5
IC2Y70	H6	Q5A1	J2
IC301	D1	Q6B00	K4
IC3A01	F3	Q6B01	J4
IC6P00	E6	Q6B02	K4
IC700	F5	Q6B03	K5
IC701	G4	Q6B00	K6
IC704	H6	Q6G01	J6
IC800	I4	Q6G02	K6
IC802	H4	Q6G03	K6
IC803	I2	Q6Y10	D5A1
IC804	J2	Q7A01	F4
IC805	K3	Q7A20	F6
IC8C00	F1	Q7A58	H5
IC8E01	H3	Q7A91	C5
IC8E02	I3	Q8D01	J3
IC8E03	I3	TP10A	E3
L2A01	C3	TP11A	G3
L2B01	C3	TP11B	D1
L2C01	F6	TP12A	F3
L2C03	E4	TP12B	F2
L2C06	D6	TP14A	D2
L2D01	C5	TP15A	F3
L2D03	B5	TU1A01	G4
L2D20	C5	TU1B01	D2
L2E00	D5A1	VR1A01	G3
L2V01	J6	X2C01	E6
L2Y20	J5	X2V00	H6
L2Y30	J5	X3A01	E3
L6B00	J5	X6P00	E6
L6B01	J4	X7I3	G6
L6G00	J6		
L6G01	J6		
L6P00	D6		
L6Y10	D5A1		
L717	G6		
L7A62	H5		
L8D01	H3		



NOTES:

- DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
- Waveforms were taken using a standard color bar signal.
- TP13, etc. show Test Points.
- CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1
Dielectric Strength	Not indicated	±50V
Tolerance	Not indicated = ±10%	No tolerance is indicated for electrolytic capacitors and ±20%
Type	I except for chips	Not indicated :Ceramic capacitor (MF) :Polyester capacitor (PP) :Polypropylene film capacitor (ALM) (TF) :Aluminum electrolytic capacitor (SC) (MP) :Metalized paper (MPP) (MMF) (MF,PP) :Polyester polypropylene film capacitor (PS) (TAN or TANI) :Tantalum capacitor (+H) :Electrolytic capacitor (NP) :Non polarized electrolytic capacitor chip
		II Chips
Characteristic (only ceramic capacitor)	Not indicated CH, SL, etc.	:F or B (high dielectric percentage) :Temperature compensating types

RESISTORS

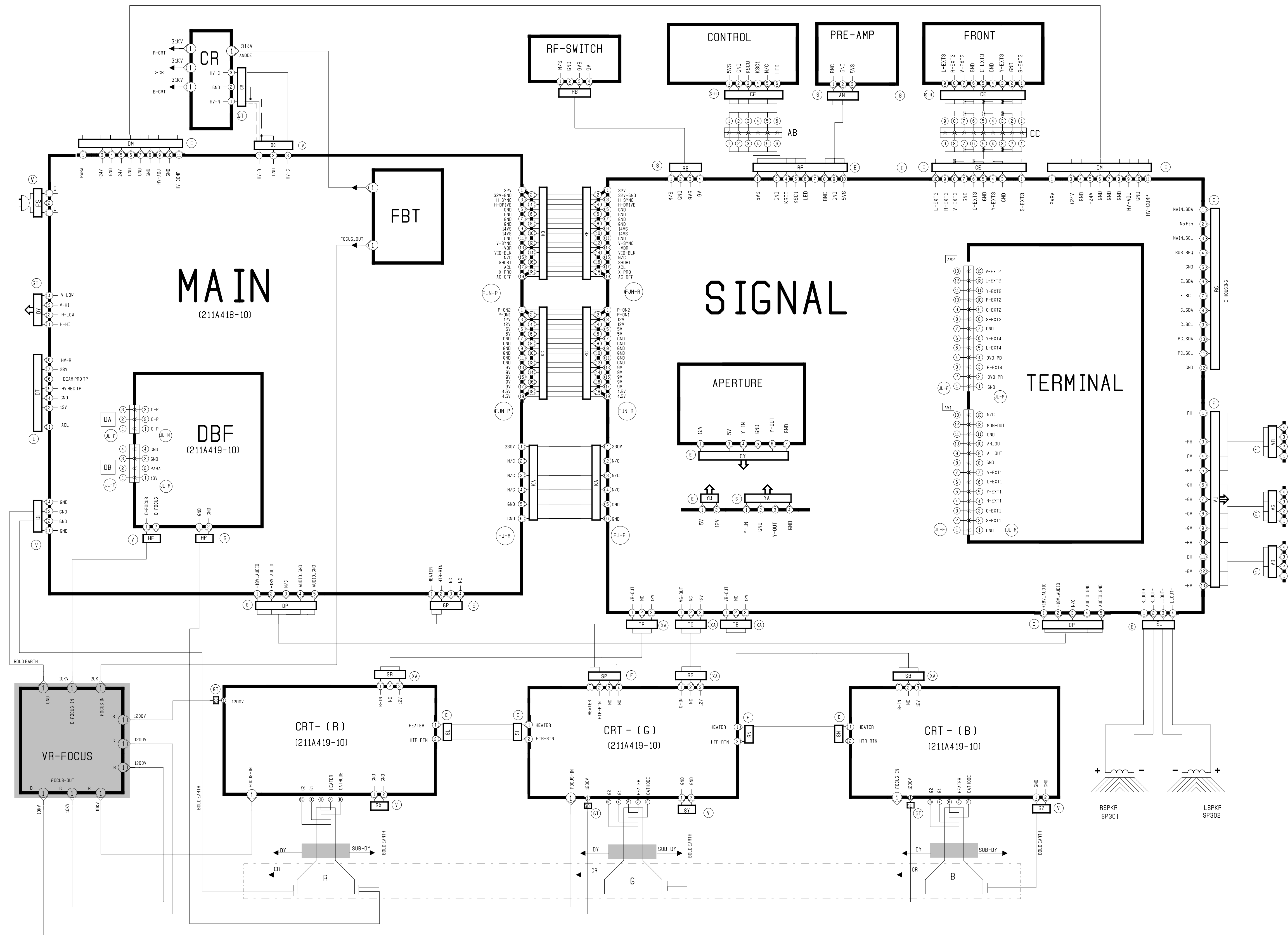
Value	Not indicated = 0hm K = 1,000 0hm M = 1,000,000 0hm	
Wattage	Parts except for chips: Not indicated = 1/4W or 1/6W Chips: Not indicated = 1/10W	
Tolerance	Not indicated = ±5% D = ±0.5% F = ±1% J = ±5% K = ±10%	
Type	I except for chips	Not indicated (S) (MB) (CE) (W) (M) (MPC) (ML) :Carbon resistor :Fixed composition resistor :Metal oxide film resistor (type B) :Cemented resistor :Wire wound resistor :Metal film resistor :Metal plate cement resistor :Metal liner resistor
		II Chip

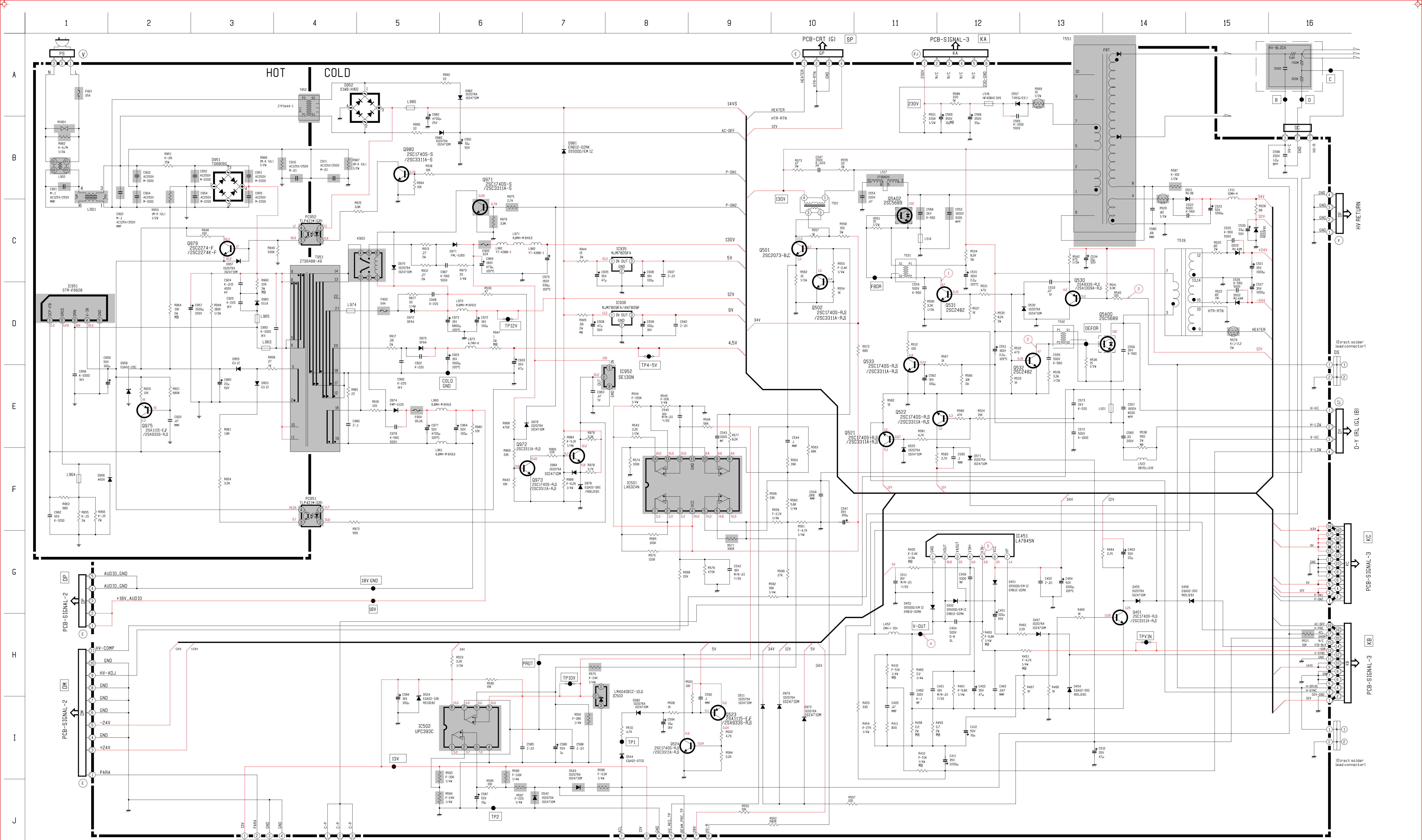
This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS, CAREFULLY READ THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL. DO NOT DEGRADE THE SAFETY OF THE PRODUCT THROUGH IMPROPER SERVICING.

SERVICE TECHNICIAN WARNING:
X-RADIATION PRECAUTION
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RADIATION PROTECTION.
TO AVOID POSSIBLE EXPOSURE TO X-RADIATION, TAKE X-RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

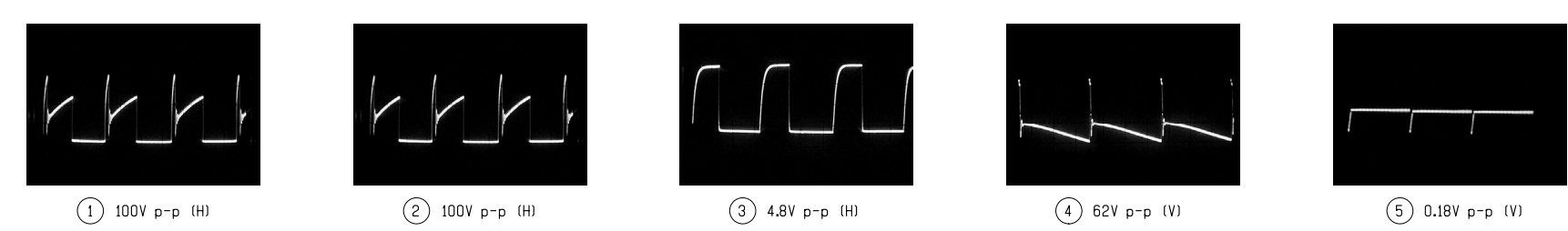
CONTENTS	VS-45609
PG.1... BLOCK DIAGRAM	VS-50609
PG.2... MAIN	VS-55609
PG.3... SIGNAL-1 (MICRO)	VS-60609
PG.4... SIGNAL-2 (AV/IO)	VS-60719
PG.5... SIGNAL-3 (VCJ/PIP)	VS-70709
PG.6... SIGNAL-4 (CRT DRIVE/APERTURE)	
PG.7... SIGNAL-5 (CONVI)	
PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF	

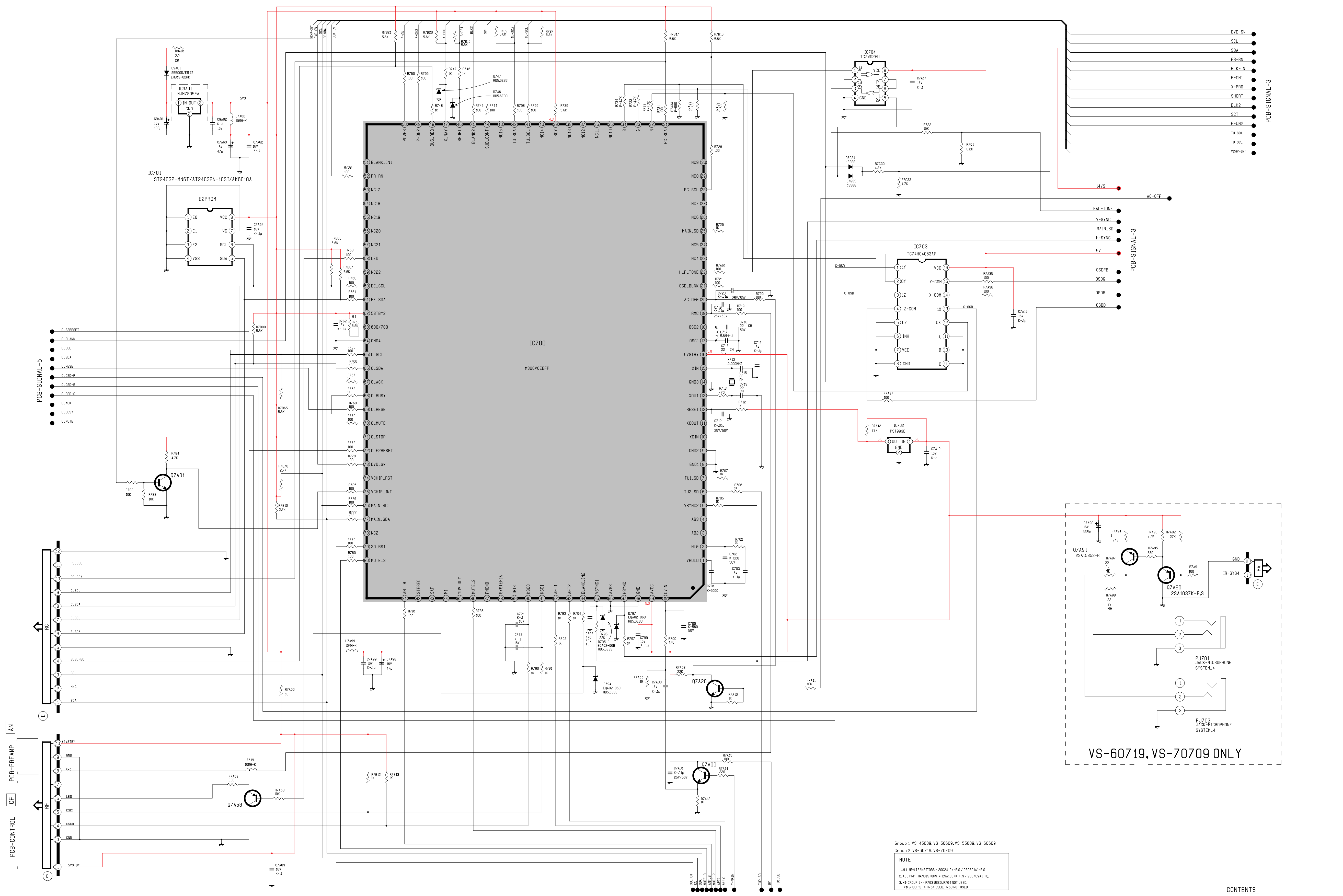




CONTENTS
 PG.1... BLOCK DIAGRAM
 PG.2... MAIN
 PG.3... SIGNAL-1 (MICRO)
 PG.4... SIGNAL-2 (AV/IO)
 PG.5... SIGNAL-3 (VCJ/P/PI)
 PG.6... SIGNAL-4 (CRT DRIVE/APERTURE)
 PG.7... SIGNAL-5 (CONV)
 PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF

VS-45609
 VS-50609
 VS-55609
 VS-60609
 VS-60719
 VS-70709

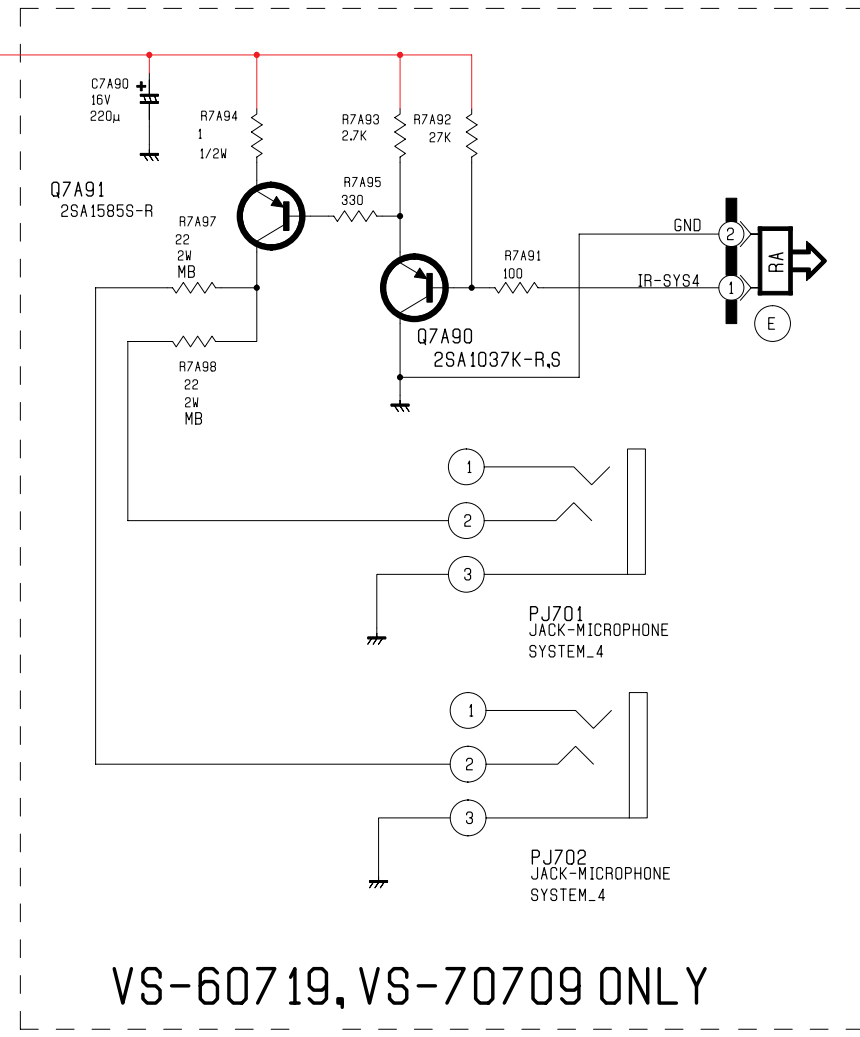




Group 1 VS-45609, VS-50609, VS-55609, VS-60609
 Group 2 VS-60719, VS-70709

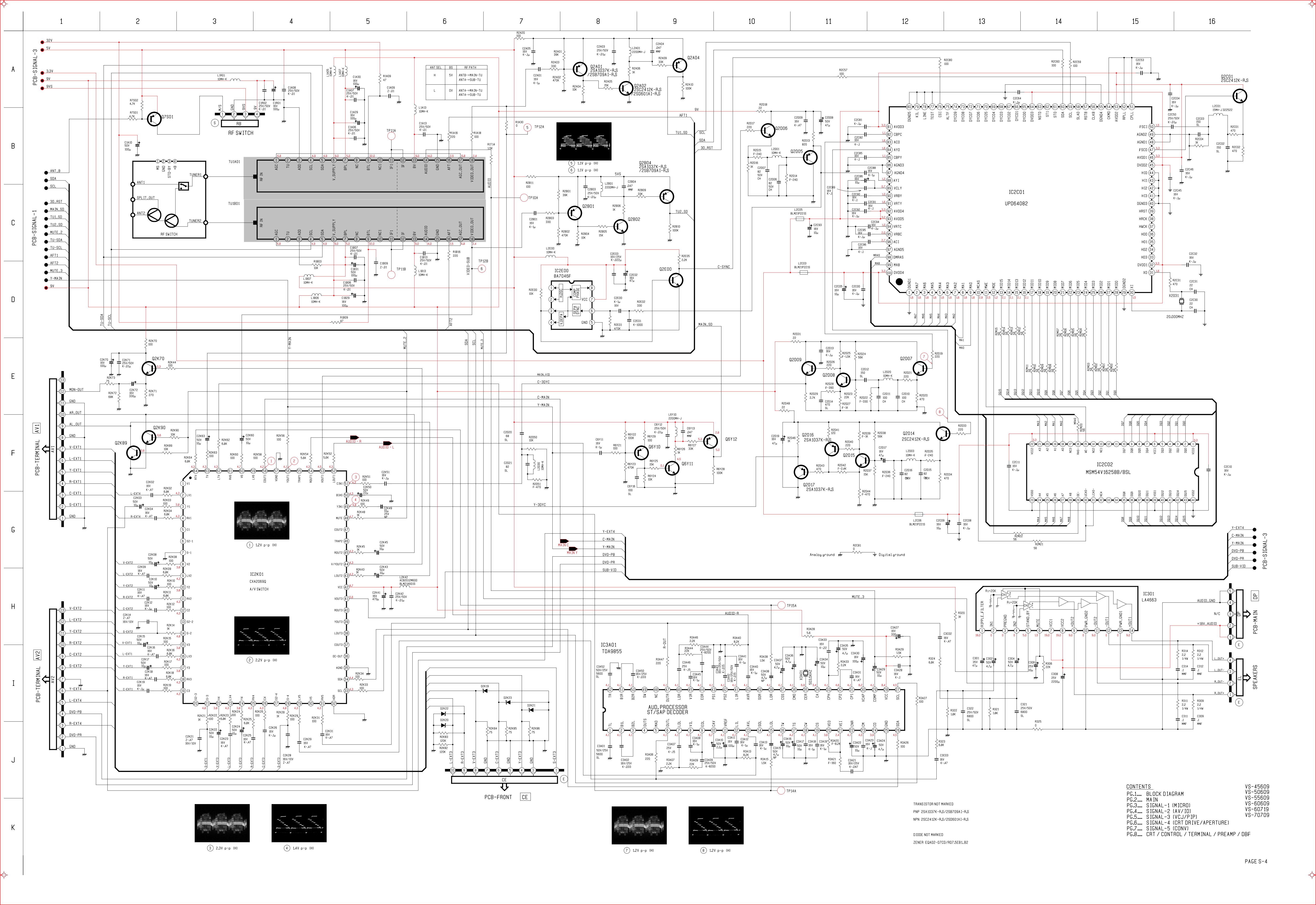
NOTE

- ALL NPN TRANSISTORS = 2SC242X-R/S / 2SC60141-R/S
- ALL PNP TRANSISTORS = 2SA1037K-R/S / 2SB70941-R/S
- 4-DRUMUP 1 -> R709 USED, R704 NOT USED, R705 R706 R707 R708 R709 NOT USED

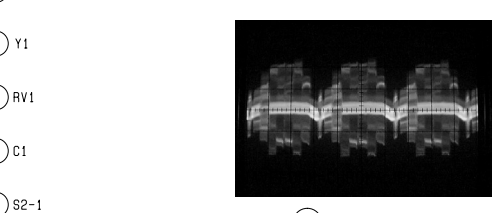
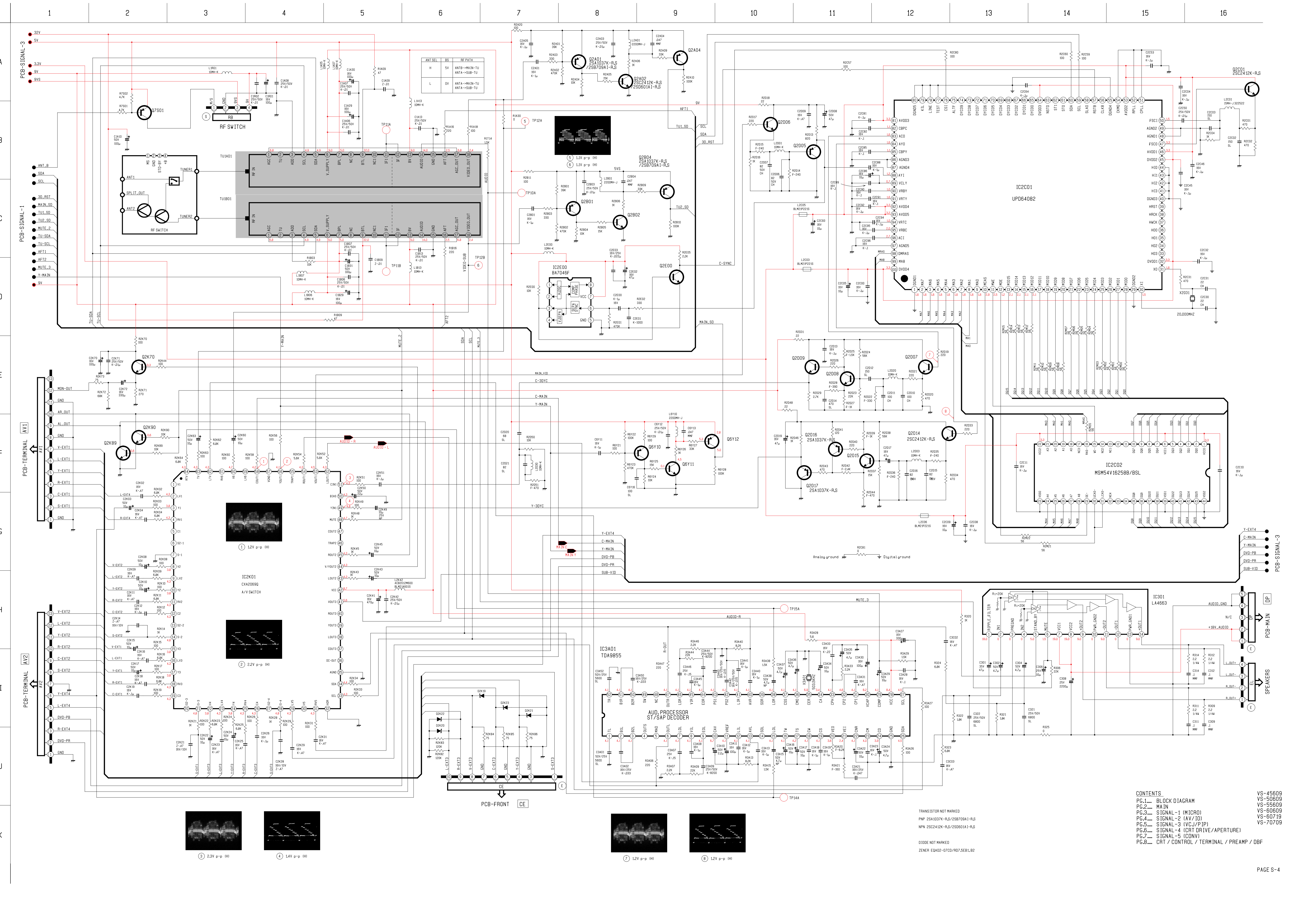


CONTENTS

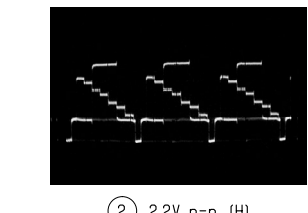
PG.1...	BLOCK DIAGRAM	VS-45609
PG.2...	MAIN	VS-50609
PG.3...	SIGNAL-1 (MICRO)	VS-55609
PG.4...	SIGNAL-2 (AV/IO)	VS-60609
PG.5...	SIGNAL-3 (VCJ/P/IP)	VS-60719
PG.6...	SIGNAL-4 (CRT DRIVE/APERTURE)	VS-70709
PG.7...	SIGNAL-5 (CONV)	
PG.8...	CRT / CONTROL / TERMINAL / PREAMP / DBF	



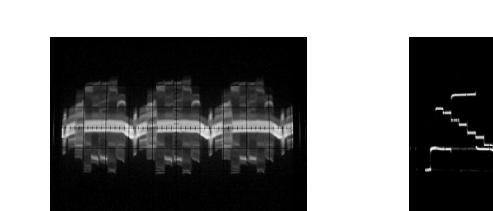
ANTI SEL	BS	RF PATH
H	5V	ANTA->MAIN-TU
		ANTA->SUB-TU
L	0V	ANTA->MAIN-TU
		ANTA->SUB-TU



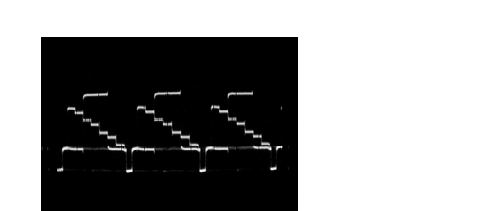
1) 1.2V p-p IH



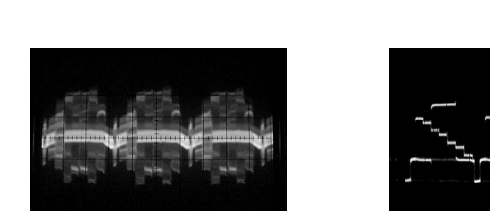
2) 2.2V p-p IH



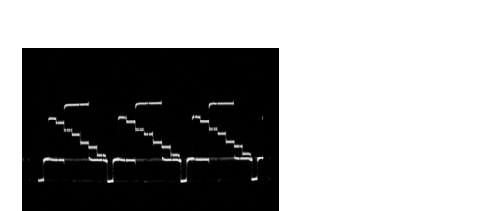
3) 2.2V p-p IH



4) 1.4V p-p IH



7) 1.2V p-p IH



8) 1.2V p-p IH

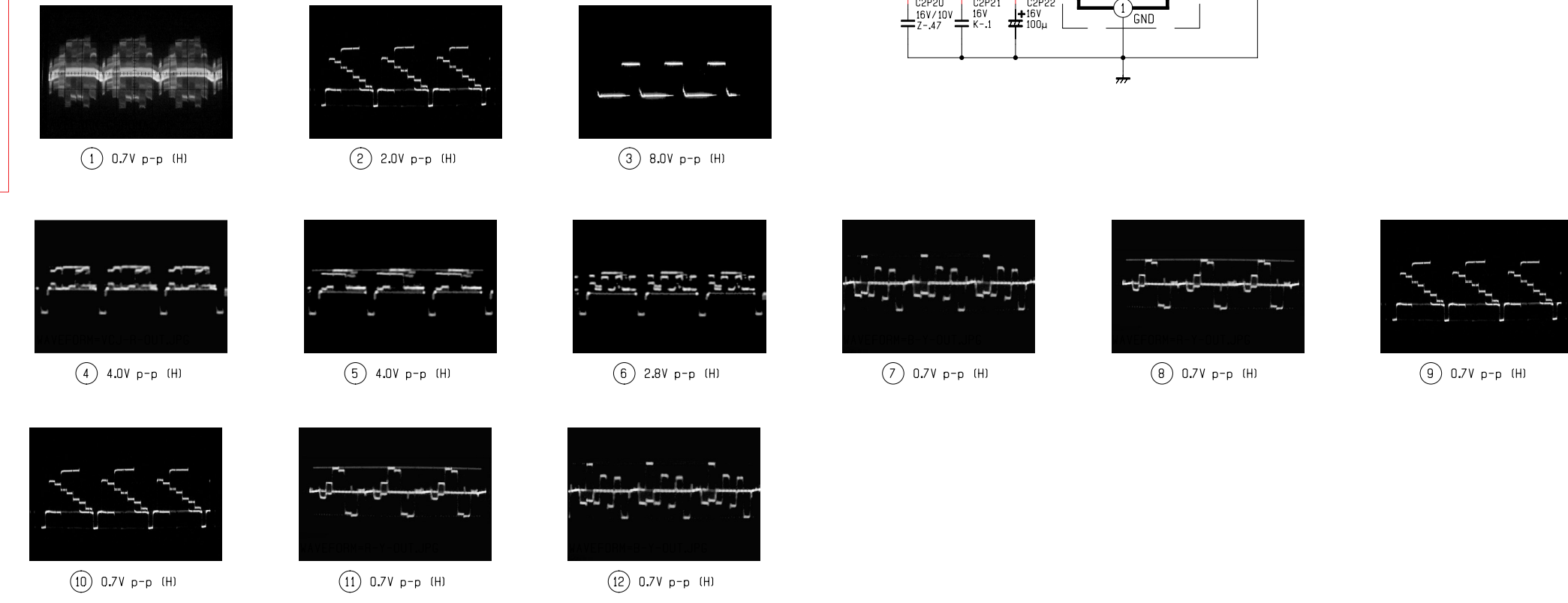
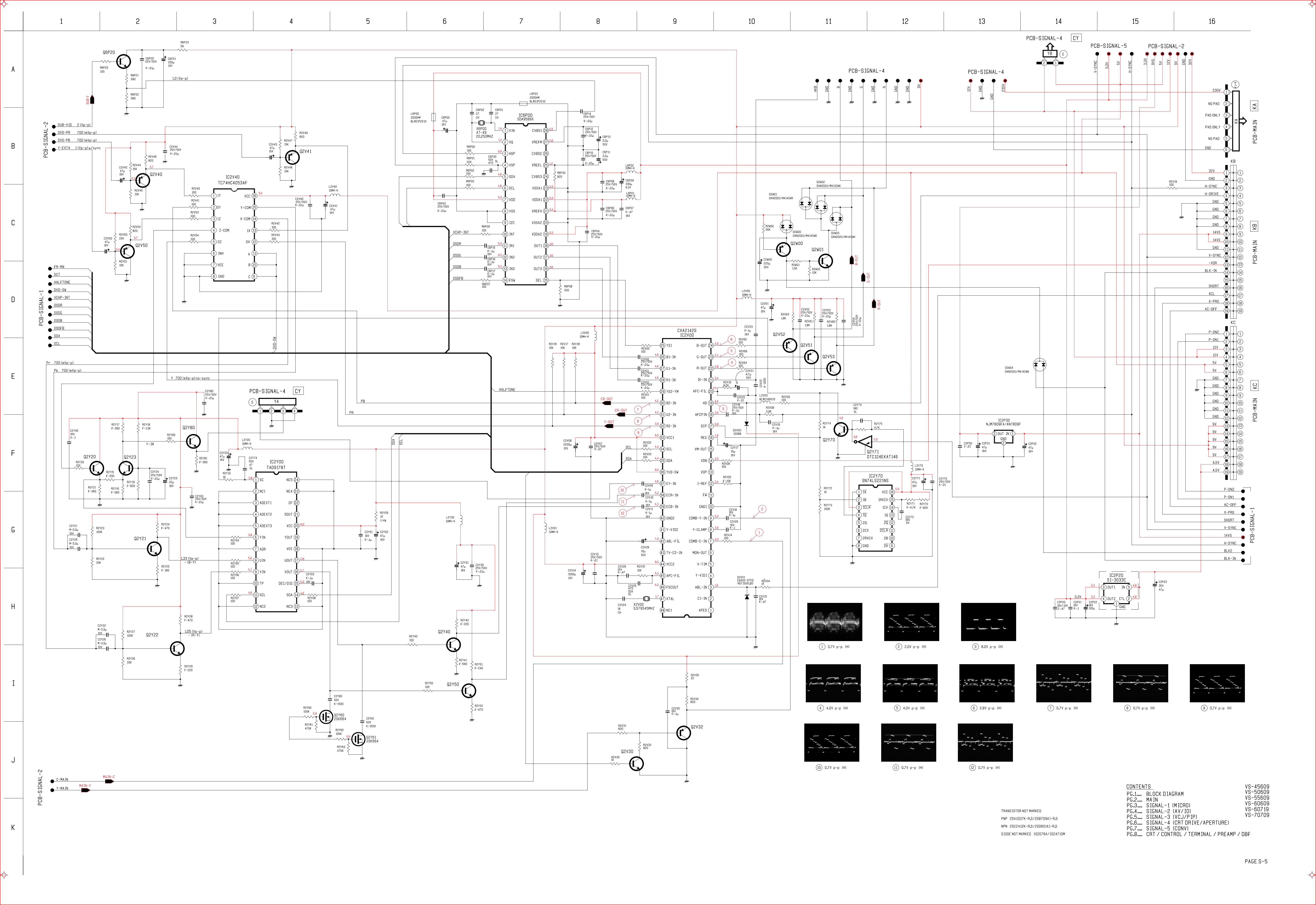
CONTENTS

- PG.1... BLOCK DIAGRAM
- PG.2... MAIN
- PG.3... SIGNAL-1 (MICRO)
- PG.4... SIGNAL-2 (AV/IO)
- PG.5... SIGNAL-3 (VCJ/P/P)
- PG.6... SIGNAL-4 (CRT DRIVE/APERTURE)
- PG.7... SIGNAL-5 (CONV)
- PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF

- VS-45609
- VS-50609
- VS-55609
- VS-60609
- VS-60719
- VS-70709

TRANSISTOR NOT MARKED
 PNP 2SA1037K-RS/2SB709A1-RS
 NPN 2SC2412K-RS/2SD601A1-RS

DIODE NOT MARKED
 ZENER EQ402-07CD/R07.5E61.92



CONTENTS

PG.1...	BLOCK DIAGRAM	VS-45609
PG.2...	MAIN	VS-50609
PG.3...	SIGNAL-1 (MICRO)	VS-55609
PG.4...	SIGNAL-2 (AV/IO)	VS-60609
PG.5...	SIGNAL-3 (VCJ/P/IP)	VS-60719
PG.6...	SIGNAL-4 (CRT DRIVE/APERTURE)	VS-70709
PG.7...	SIGNAL-5 (CONV)	
PG.8...	CRT / CONTROL / TERMINAL / PREAMP / DBF	

TRANSISTOR NOT MARKED
 PNP 2SA1037K-RJ/2SB709A1-RS
 NPN 2SC242K-RJ/2SD601A1-RS
 0100E NOT MARKED 1S2076A/1S24710M

A

B

C

D

E

F

G

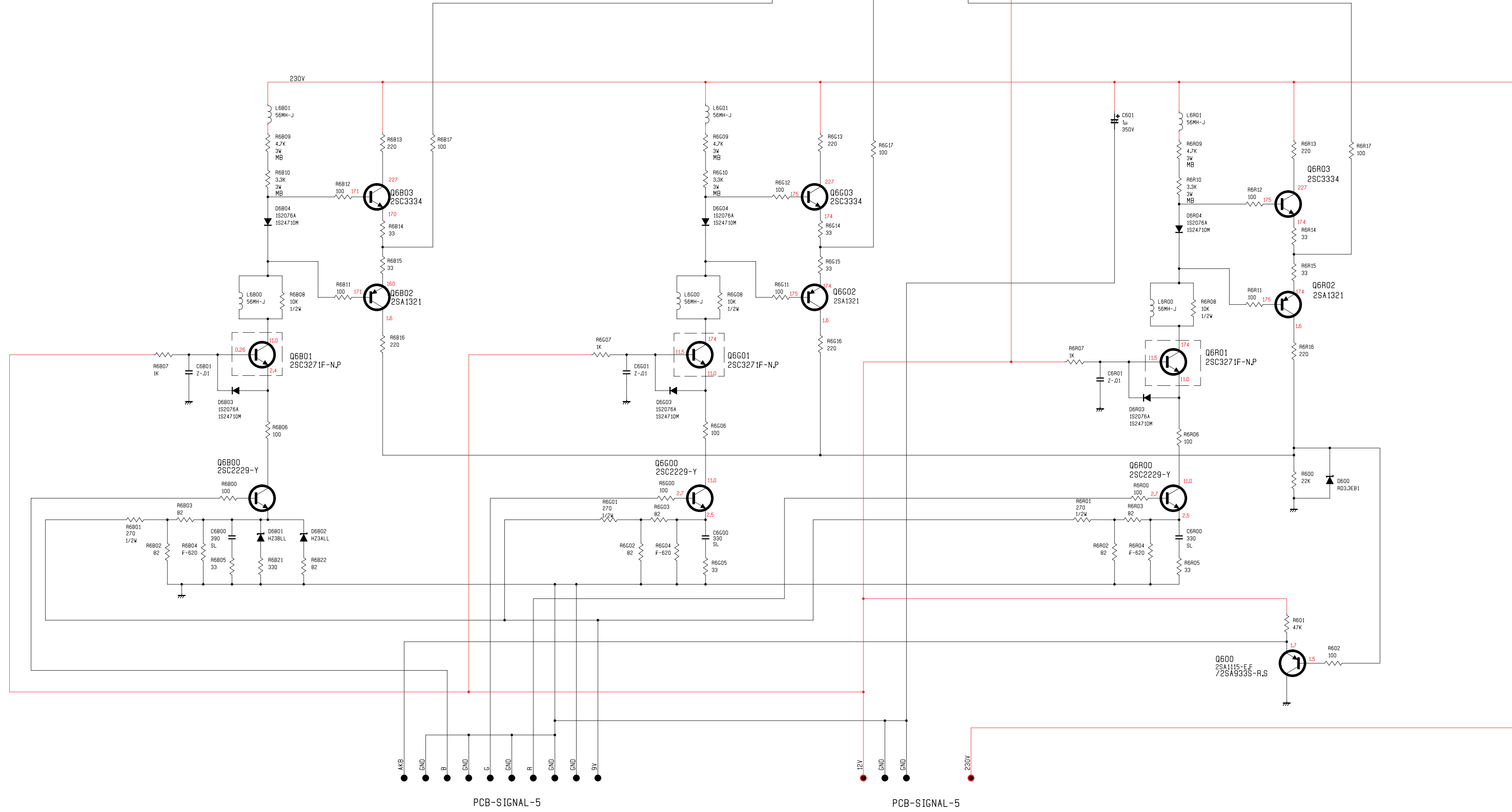
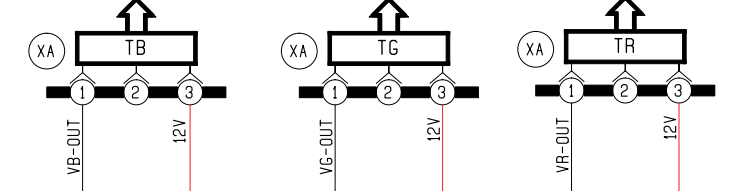
H

I

J

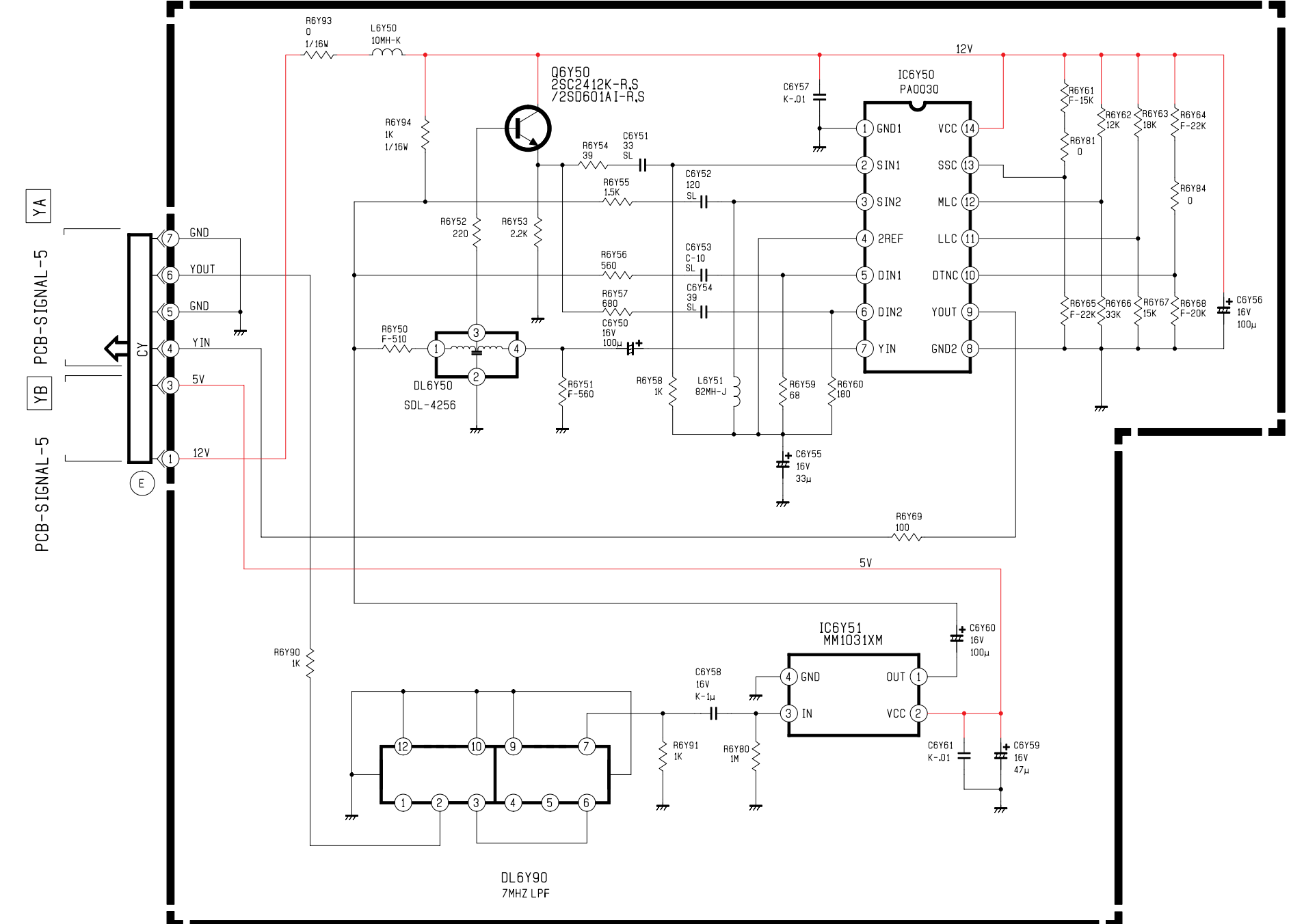
K

PCB-CRT (B) SB PCB-CRT (G) SG PCB-CRT (R) SR

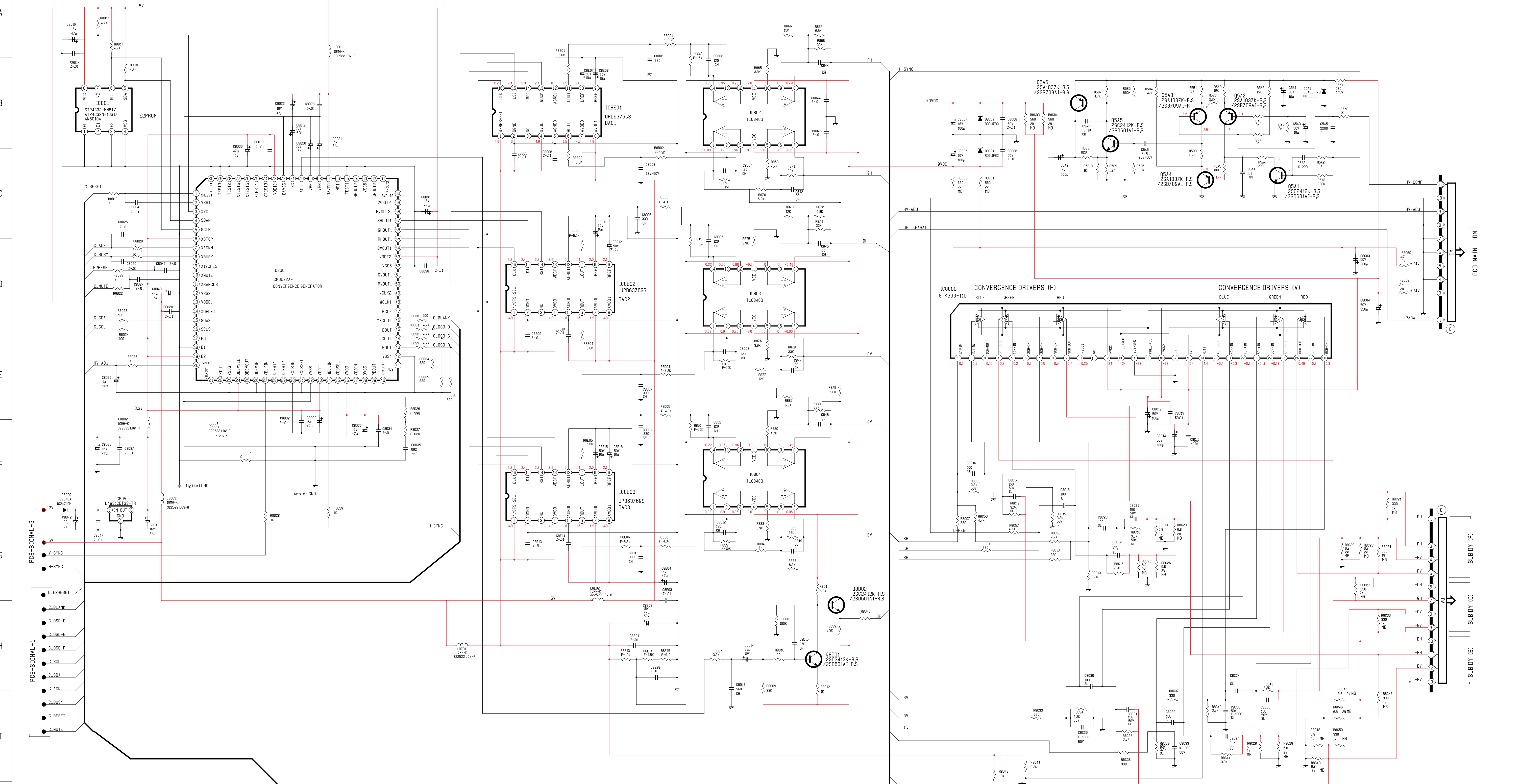


PCB-SIGNAL-5

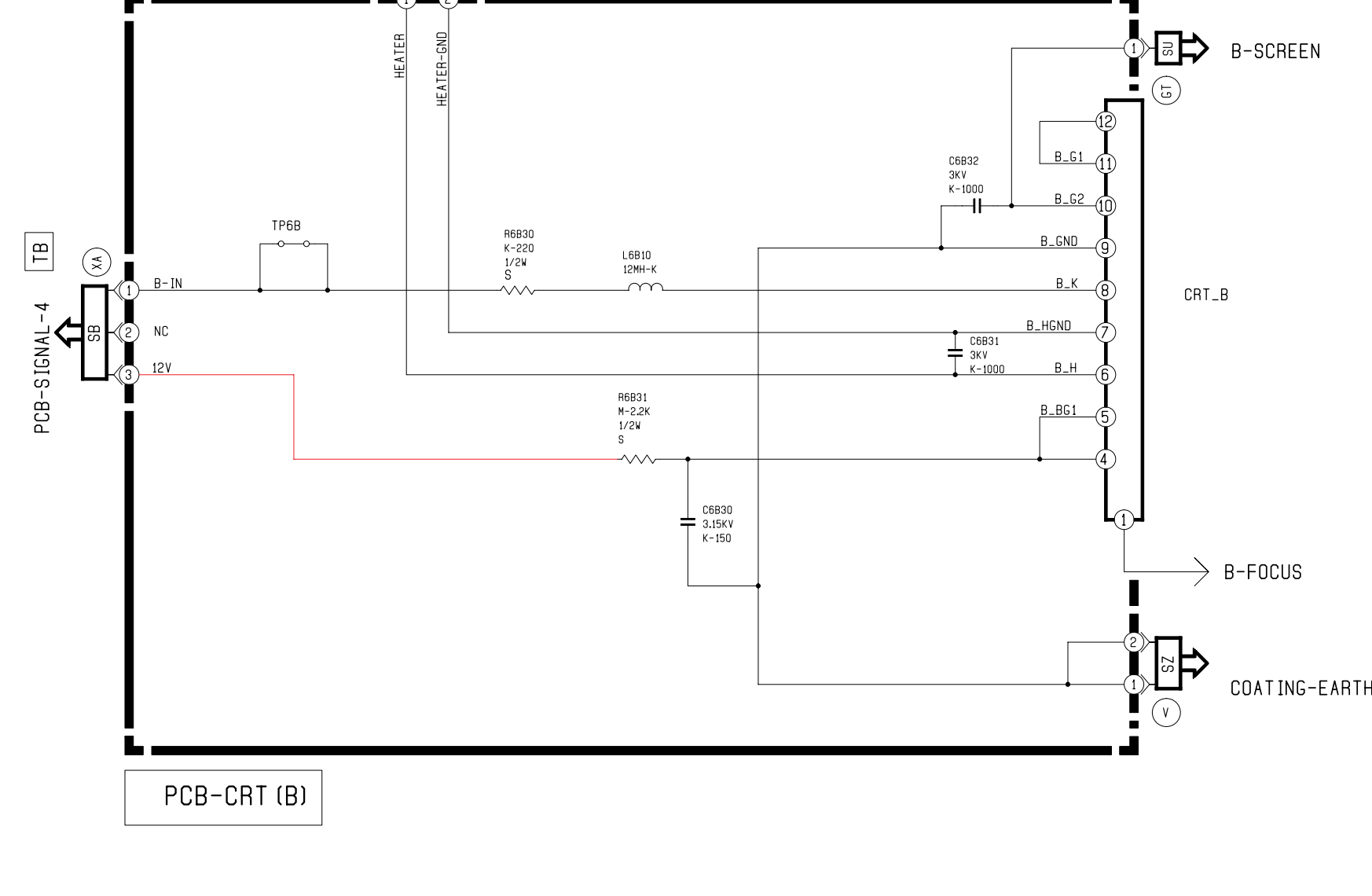
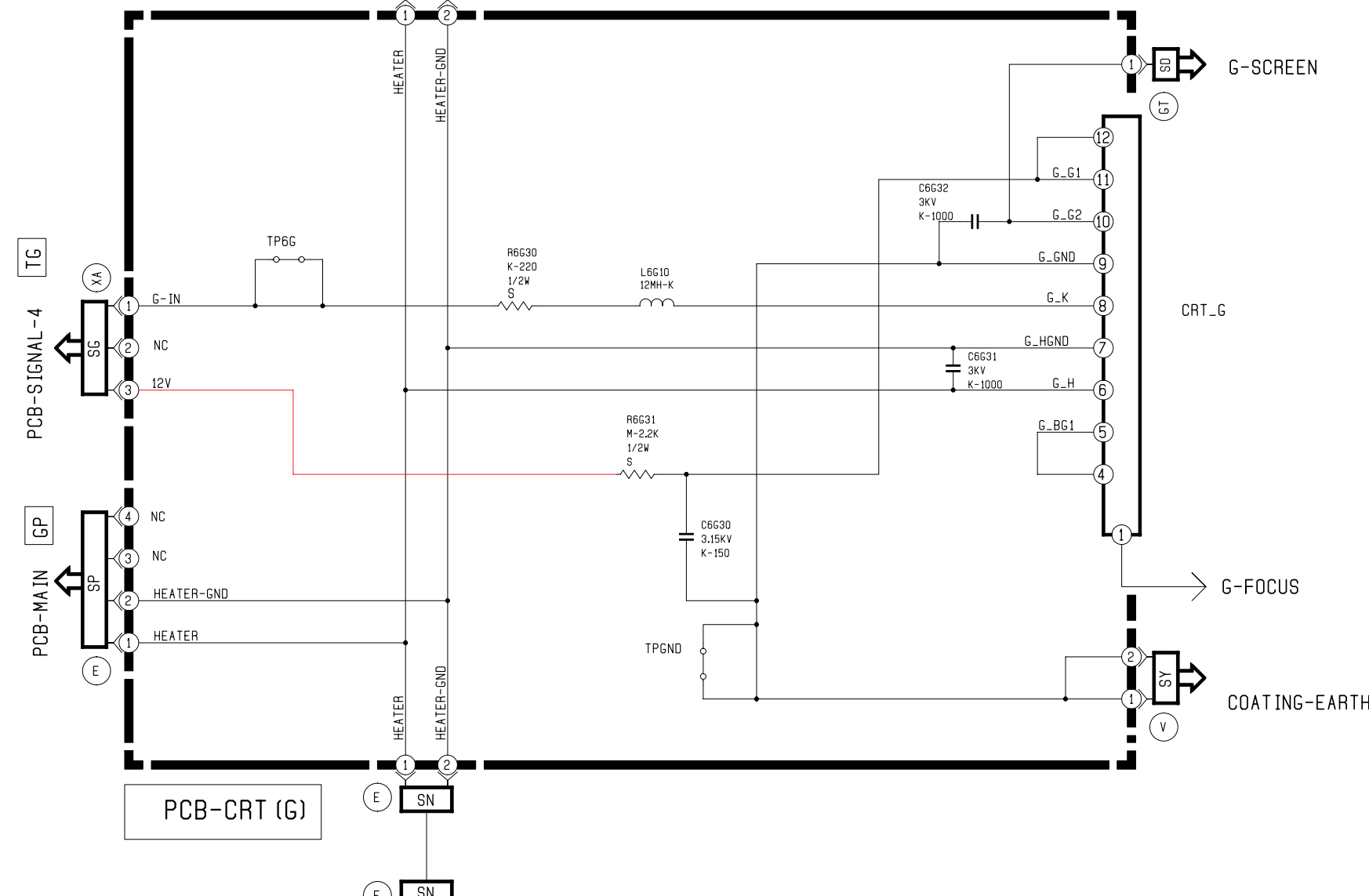
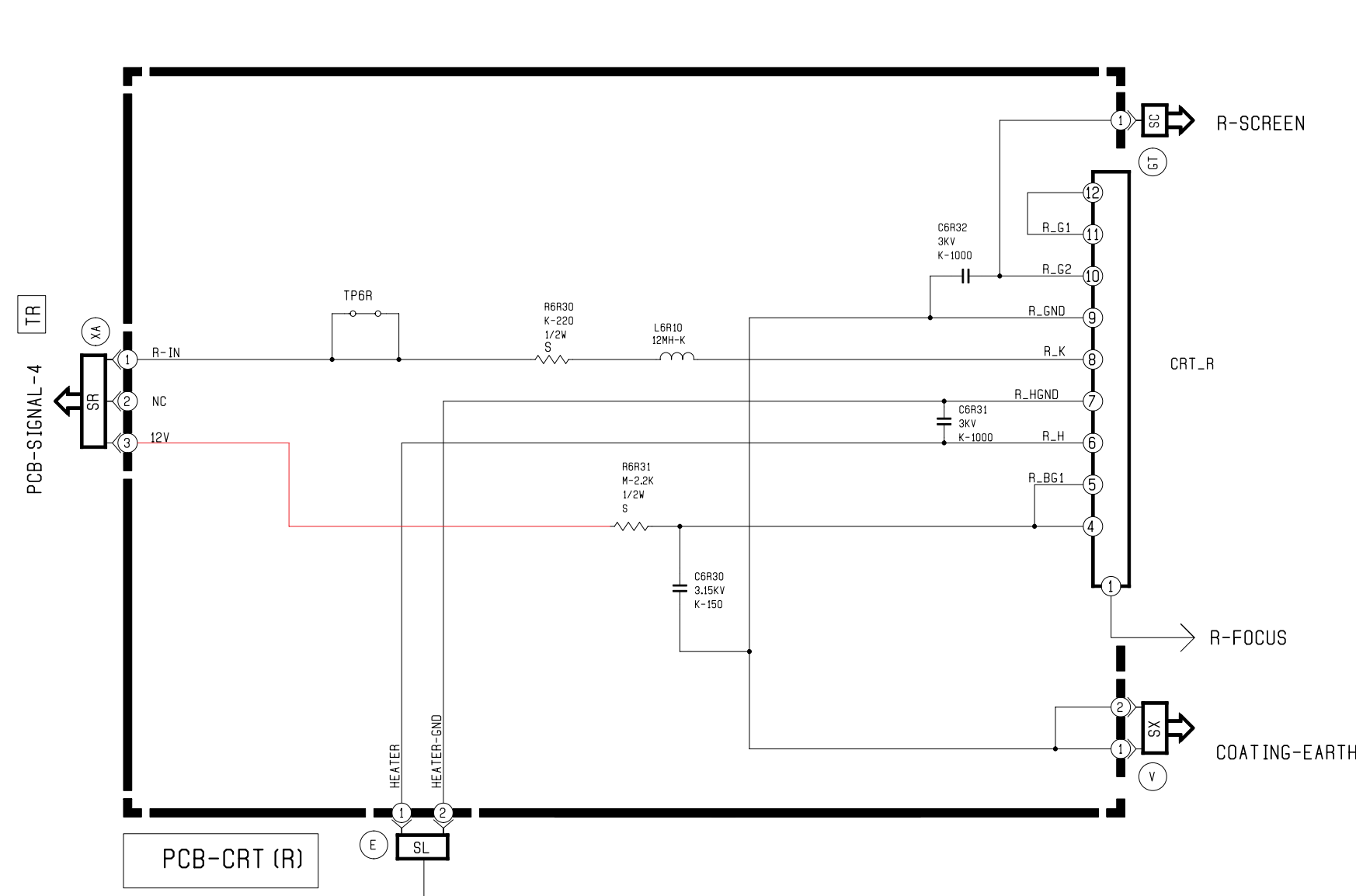
PCB-SIGNAL-5



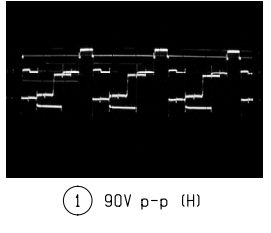
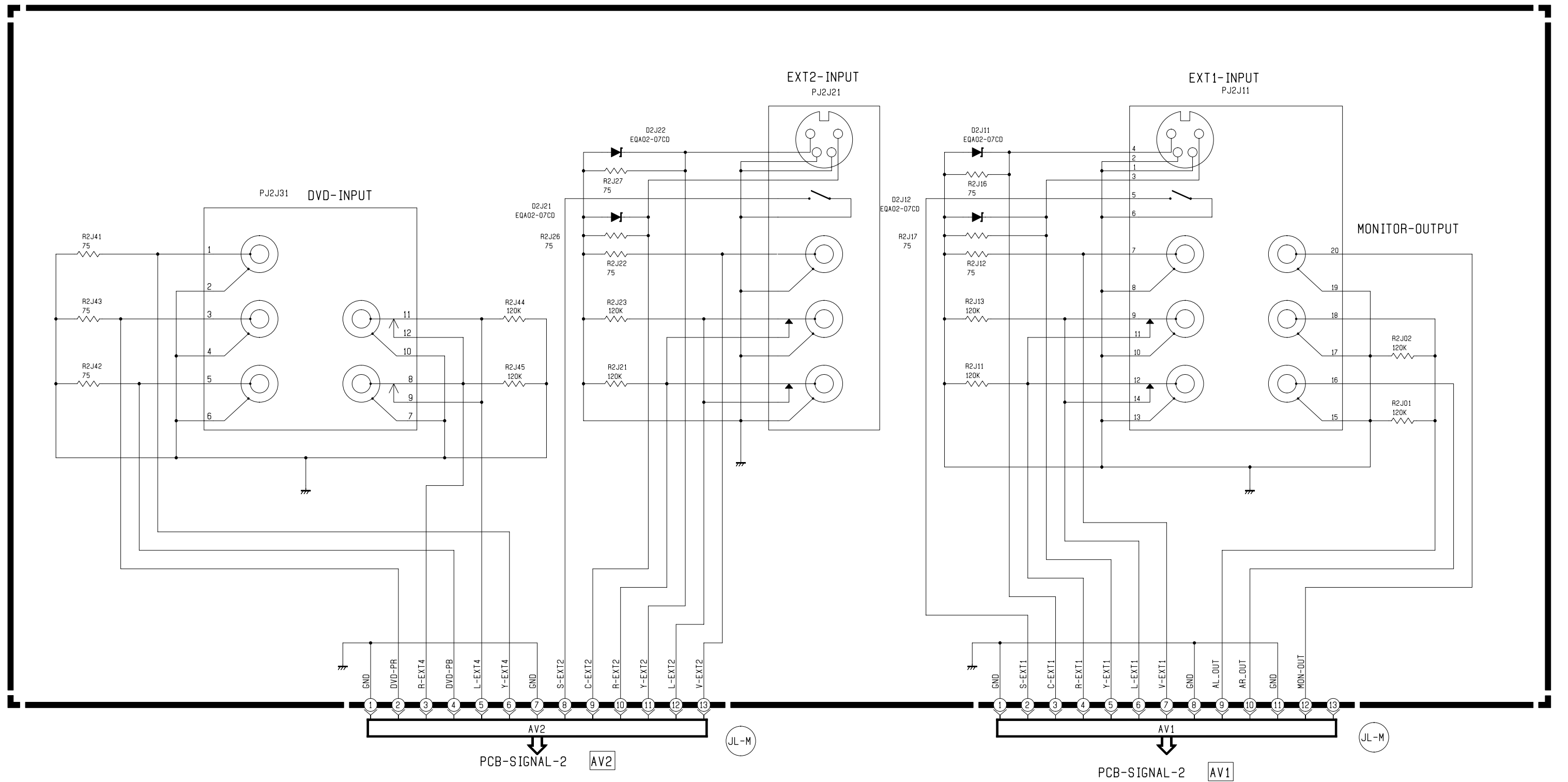
CONTENTS	VS-45609
PG.1... BLOCK DIAGRAM	VS-50609
PG.2... MAIN	VS-55609
PG.3... SIGNAL-1 (MICRO)	VS-60609
PG.4... SIGNAL-2 (AV/IO)	VS-60719
PG.5... SIGNAL-3 (CRT DRIVE/APERTURE)	VS-70709
PG.7... SIGNAL-5 (CONV)	
PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF	



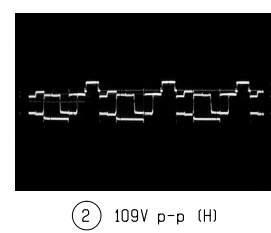
PCB-SIGNAL-3	PCB-SIGNAL-1	CONTENTS	VS-45609
1V	1V	PG.1... BLOCK DIAGRAM	VS-50609
5V	5V	PG.2... MAIN	VS-55609
V-SYNC	V-SYNC	PG.3... SIGNAL-1 (MICRO)	VS-60609
H-SYNC	H-SYNC	PG.4... SIGNAL-2 (AV/IO)	VS-60719
C.E2RESET	C.E2RESET	PG.5... SIGNAL-3 (VCJ/PIP)	VS-70709
C.BLANK	C.BLANK	PG.6... SIGNAL-4 (CRT DRIVE/APERTURE)	
C.OSD-B	C.OSD-B	PG.7... SIGNAL-5 (CONV)	
C.OSD-C	C.OSD-C	PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF	
C.OSD-R	C.OSD-R		
C.SDA	C.SDA		
C.ACK	C.ACK		
C.BUSY	C.BUSY		
C.RESET	C.RESET		
C.MUTE	C.MUTE		



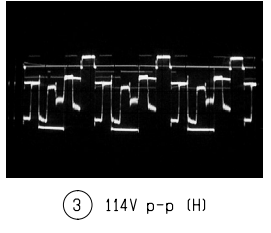
PCB-TERMINAL



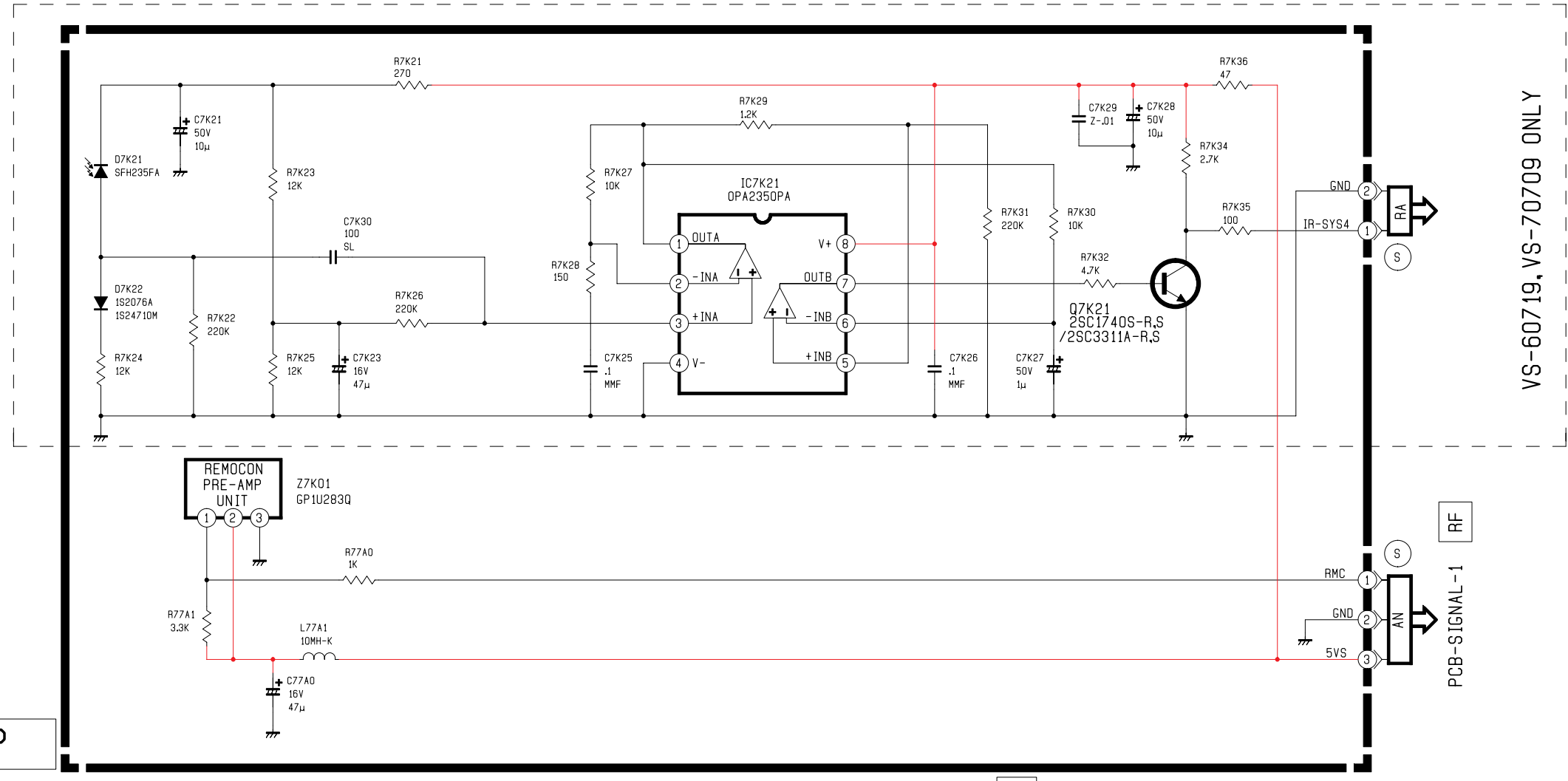
1 90V p-p IH



2 100V p-p IH

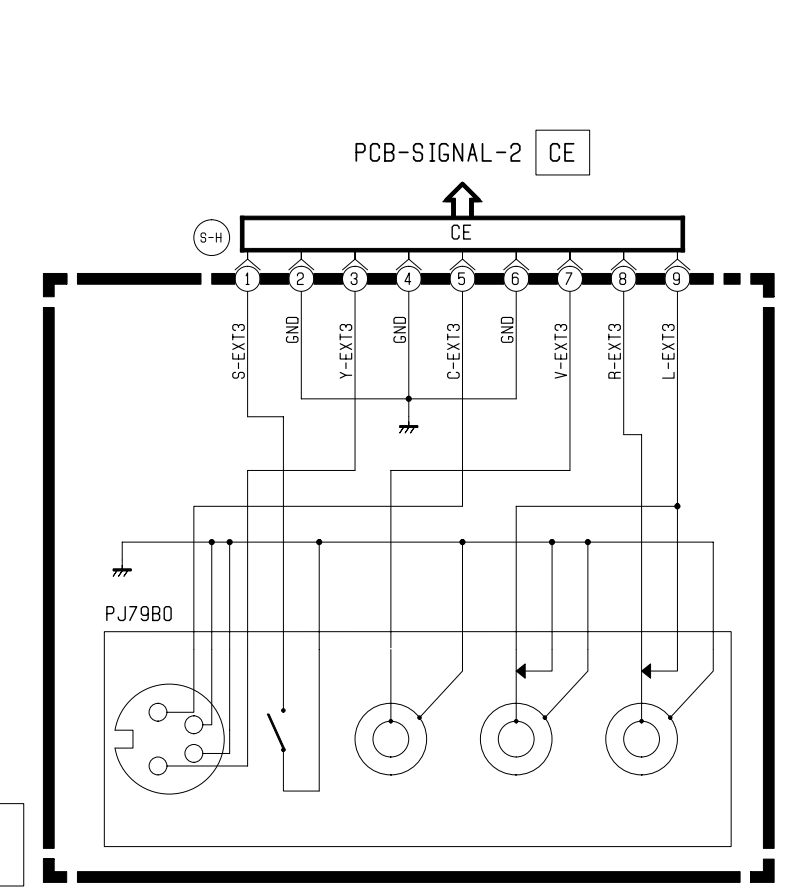


3 114V p-p IH

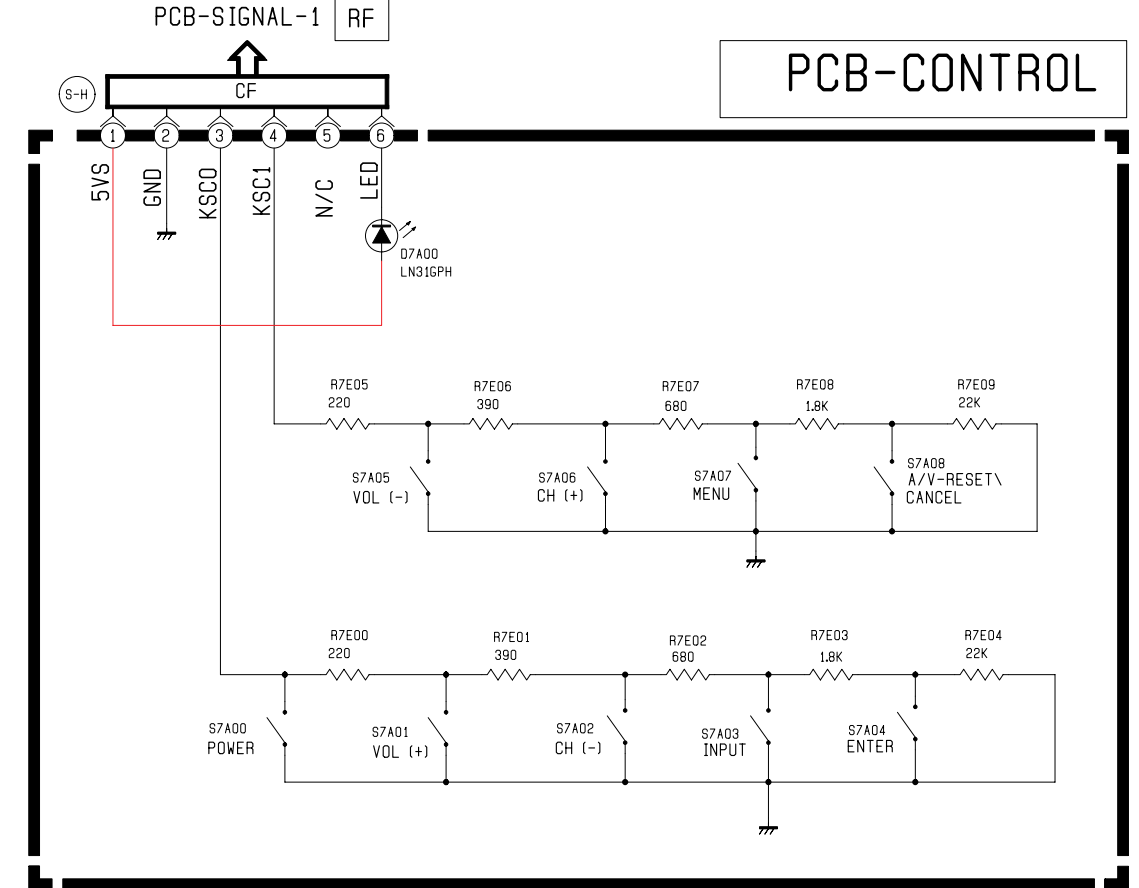


PCB-PREAMP

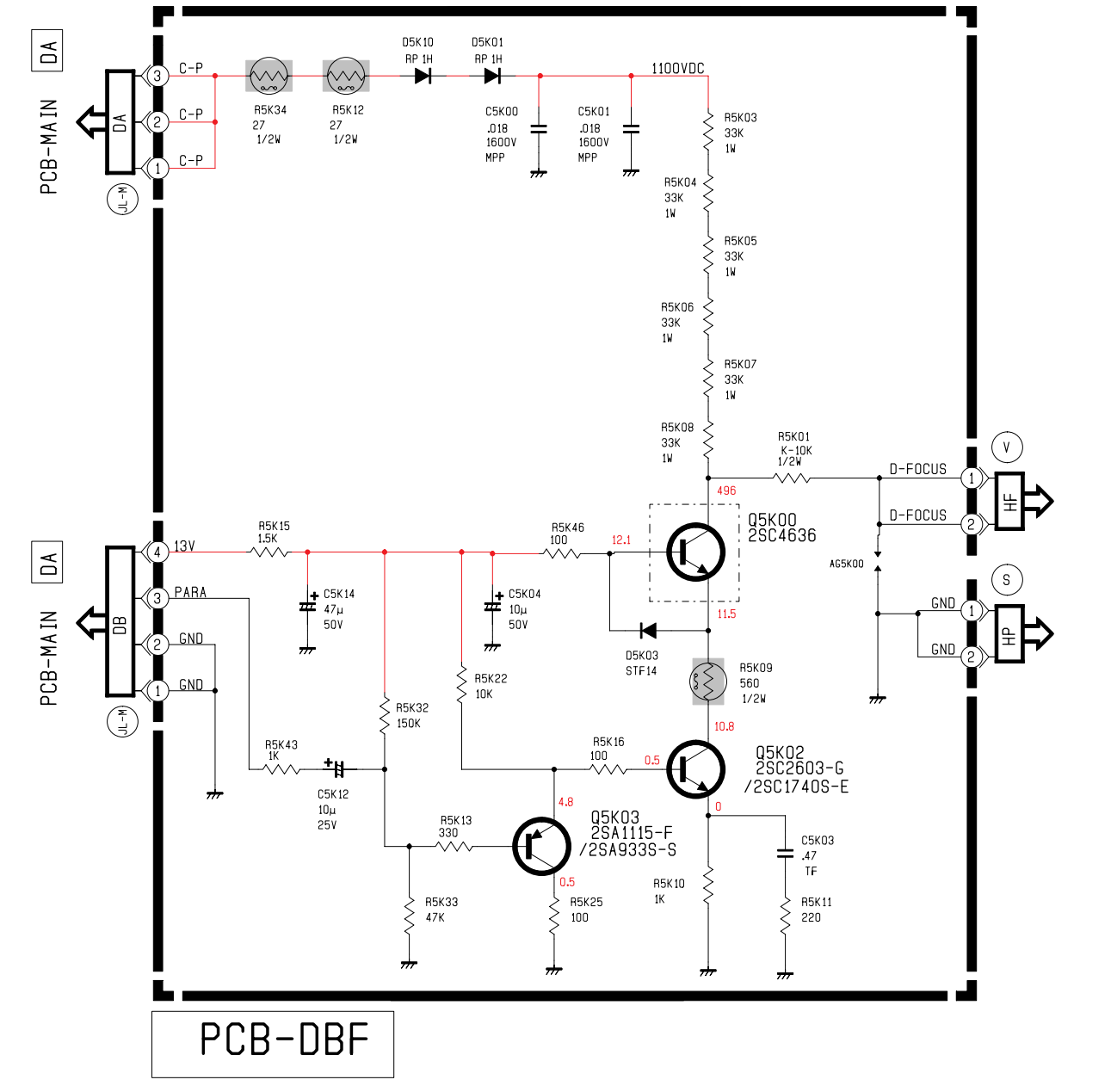
VS-60719, VS-70709 ONLY



PCB-FRONT



PCB-CONTROL



PCB-DBF

Group 1 VS-45609, VS-50609, VS-55609, VS-60609
Group 2 VS-60719, VS-70709

CONTENTS
PG.1... BLOCK DIAGRAM
PG.2... MAIN
PG.3... SIGNAL-1 (MICRO)
PG.4... SIGNAL-2 (AV/IO)
PG.5... SIGNAL-3 (VCI/PIPI)
PG.6... SIGNAL-4 (CRT DRIVE/APERTURE)
PG.7... SIGNAL-5 (CONV)
PG.8... CRT / CONTROL / TERMINAL / PREAMP / DBF
VS-45609
VS-50609
VS-55609
VS-60609
VS-60719
VS-70709